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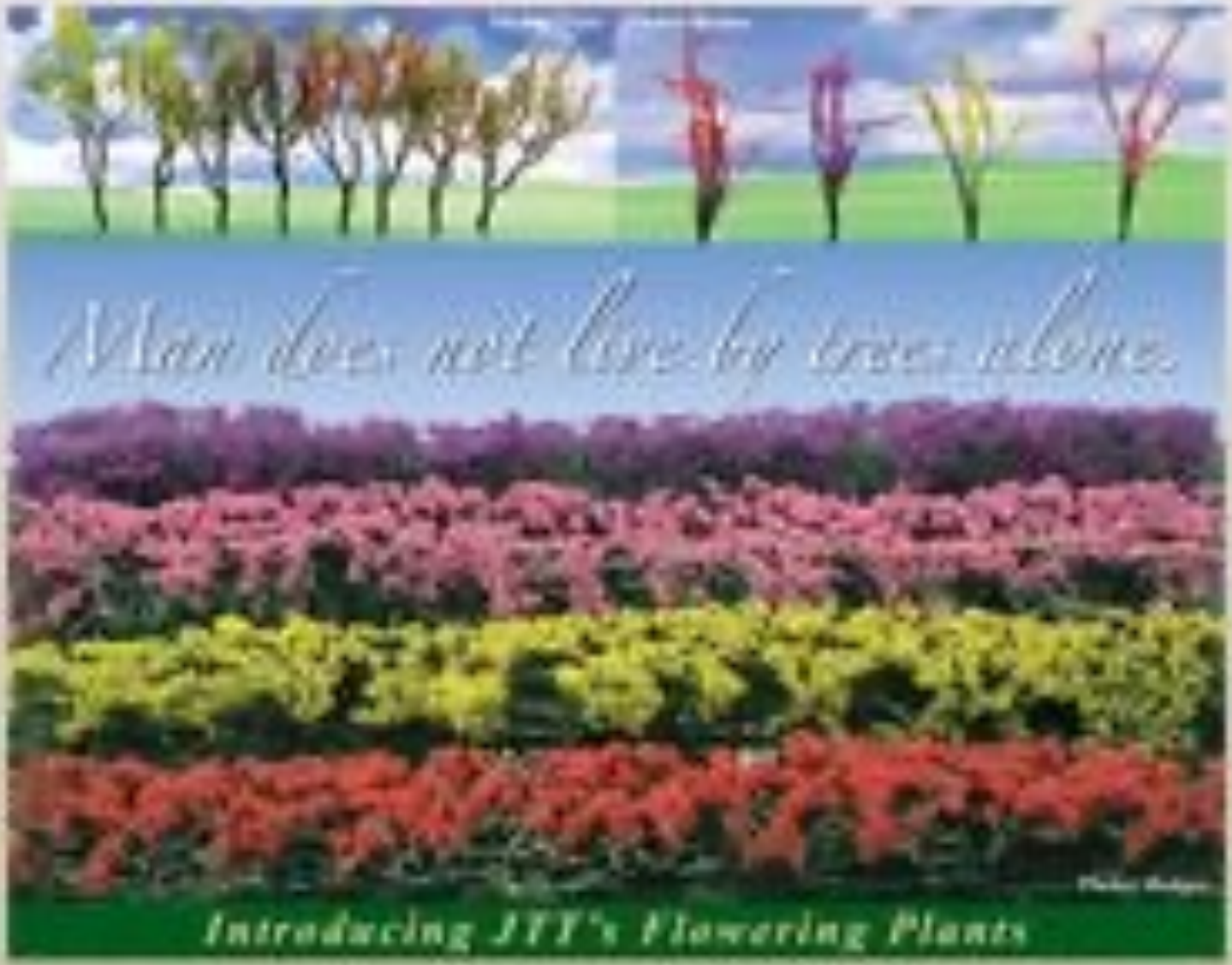

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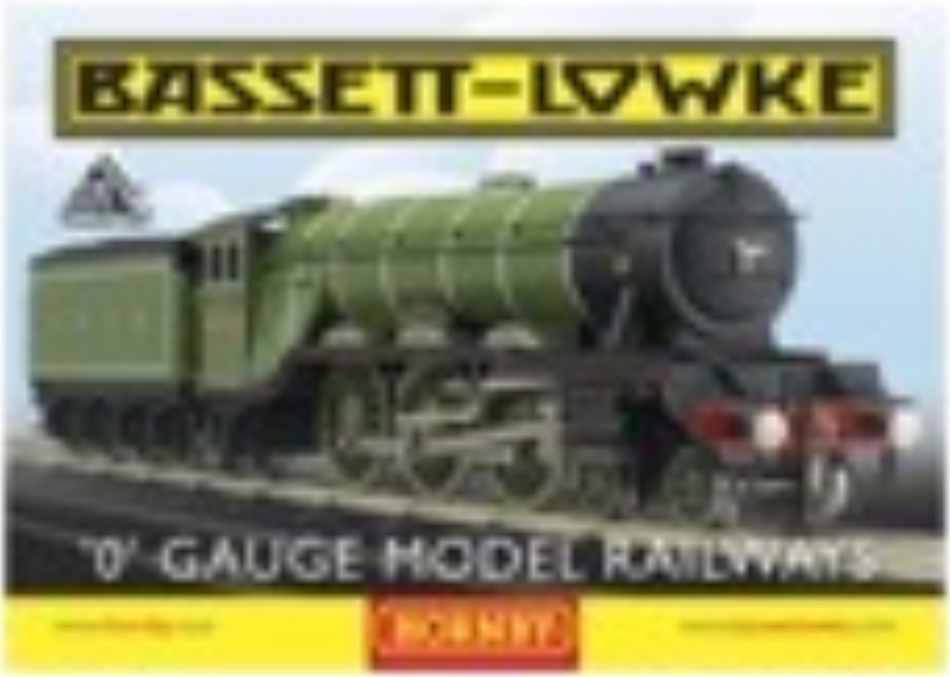
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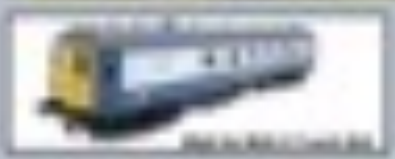

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We were saddened to learn of the passing of William D. Middleton, whose proses and photographs helped inform and entertain (at least all persuasively the) several a wide range of railroad subjects, but for many of us, his automotive books on passenger cars and electric railroads remain encompassed. His body of work encompassed more than twenty books – all of which are worthy of collecting. Mr. Middleton died at his home in Cazenia, New York, July 11, 2011. He was 83.

We send our best wishes to modeling wizard Terry Shapiro who is slowly recovering from critical renal failure. Well-wishes can be sent to Terry at the Huntington Beach Hospital, 17772 Beach Blvd, Huntington Beach, CA 92647.

Best wishes also go to Intermountain CEO Frank Angstead who is recovering from knee surgery.

The roster of talented clinicians scheduled for the Nine Scale Model Railroader Expo 2011 continues to grow, with the list board currently listing the names of Jon Ashburn, Mike Baker, George Barnes, Brian & Jill Bellinger, Michael Duggan, Jack Ellis, Doug Hocutt, Dave Irons, Brett Gallant, Russ Greene, Ken Hamilton, Frank Hare, Dana La Vienne, Chris Lyon, Bob Mitchell, Bruce Nickerson, Dave Rawlins, Hal Reynolds, Lou Sassi, and Rob Van Dalen. The event is scheduled for October 13-15, in Knoxville, Mass. Additional details are listed on our Selected Events report on page 123.

Look for Sergeant Engineering the announcer Type-R Tightlock couplers in the near future. Also under development is a clever uncoupling wand that slips under (and longer car) draftgears.

Ken Isaac Recalls in the late, the eight-year-old first journalist in this film decade primarily for DENVER, Colorado & Southern, and other narrow gauge centre lines. In addition, Ken Isaac took over the daily production of Hoelzlally Model Works a few years ago. The business is scheduled to cease operations at the end of August. Anyone seriously interested in buying this company should contact Warren Griffith at 970-946-3654.

We had a great time at the National Train Show in Sacramento, meeting new people, chatting with old friends, and taking a close look at all the wonderful goodies on display. The event was well attended, with the gate folks reported at 12,400 for the three day public event.

Among the busiest booths at NTS was Kadee's, with Alan Jacobs and Sam Clarke answering dozens of questions about the many variations of their always-new couplers.

Congratulations to E.W. Czerwinski of Truckee, California, who won the Model Railroad Hobbyist drawing for a Kato iPad. To get E.W. started, all past issues of MRH were loaded into the iPad.

Despite the bleak economy, model railroad manufacturers, including many who attended NTS, are showing their confidence in the future by continuing to make really investments in new tooling. For example, Trainworx is currently preparing tooling for a 39' Wrap Trailer parcel van with dollies, and a 40' Wide waterslide flat car complete – all in N scale. Expofleft will soon announce a 60' Mill gondola, Kadee's beloved Micro-Trains is tooling up for a 2' scale PFE class R30-2 wood sheathed ice reefer for introduction late this year, and Broadway Limited is finishing new tooling for an HO scale New York Central steel boxcar with both 6/6 Dreadnought and 1/8 corrugated ends.

Our news report this month includes information about lots of new and exciting products, including many that were introduced at the National Train Show in Sacramento, California. You'll also see reference to some interesting sites

interviews Jeff Shultz conducted with several manufacturing officials at NTS. Be sure to check them out.

NEW PRODUCTS FOR MULTIPLE SCALES

Scenic Express (scenicexpress.com) showed several new items at the National Train Show including some impressive Giant Sequoia trees that range 10", 12", 14", and 30" tall. Other unique products included real wild grass from Germany that offers the same results as static grass but does not require any expensive electronic application equipment. The new material is available in eight colors in both loose and bag packs. For additional information about these and other innovative scenery products, click on model railroad supply MAY, 2011, SCENIC EXPRESS to watch MRR's exclusive interview at the National Train Show with Scenic Express CEO Jon Klein.

O SCALE PRODUCT NEWS

Among the many items being shown in **Bachmann's** (www.bachmann.com) large display booth at the National Train Show was a pilot model of their forthcoming 2-6-0 1st Year Mogul (Baldwin/Heisler) Locomotive. The Spectrum series made-to-run model is based on an early Harlan manufactured in the late 1890s. The model illustrated here is a pre-production one sample, will be available this fall decorated for Colorado Mining Co., Atkinson Quarry & Mining Co., and Greenbrier & Big Run.

as well as an unlettered version in plain black, black with white pinstripes, and black with red lettering. Prices, wire rims, and white running board stripes. The ready-to-run model has an MSRP of $425.00 each. The model comes with DCC for speed, direction, and lighting control. It is ready for a plug and play sound module that is sold separately at $129.95. Dirk Anderson will undoubtedly be quick to convert this model to their fine-looking wide-track gauge.

Intermark Laser (intermarklaser.com) has introduced this Crane Truck conversion kit that fits on a Bachmann On30 rail truck. The kit sells for $32.95 and features laser-cut components, jig assembly jig, special graphics, and the before-below cast detail parts. The rail trucks and figures are not included.

Fulstrand's Laser also introduced its new Wyo Street Garage at the National Train Show. The finished structure has a footprint of 6.5 x 4.5 inches. The O scale kit sells for $84.95. The vehicle and figure are not included (see picture previous page).

Morgan Hill Models (morganhillmodels.com), a New Hampshire company focused on Grand Canyon Railway stock, has released its first structure kit — and they picked a gem. Modelers will recognize the Phoenix Produce Company as classic "mom-and-pop" backside building that first appeared as a construction article by Earl Smallwood in a 1979 edition of Model Railroader magazine. It was subsequently made available as an HO scale kit. Morgan Hill's O scale laser-cut version was engineered with assistance from master builder Bill Martin. The kit is priced at $165.00 with only 50 scheduled to be cast.

S SCALE PRODUCT NEWS

Alpine Shelvium Scale Models (www.alpineshelvium.com) has entered the S scale field with the introduction of George's Hotel & Union. The model uses the wall construction kraft board and wood construction technique with Grandt Line windows and doors, and Tichy details including a crane and barrels. The kit is priced at $49.99.

HO SCALE PRODUCT NEWS

Accurail (www.accurail.com) has completed new tooling for an 40' steel 40' dual refrigerator car with traditional hinged doors. The initial release, scheduled for late July or early August, will be for Santa Fe cars in both yellow and orange. As shipping dates get, but fully decorated cars expected to be released soon will include Northern Pacific, NYC-ARDT, Frisk Growers Express, Milwaukee Road (#97), Burlington Route, PFE (WP/UP), Illinois Central, Kansas & Minnesota, Rock Island (#97), and Great Northern. The cars will have an MSRP of $34.98. Accurail has also finished valve tooling for a similar car with a plug door. Other car kits scheduled for release this month include an Erie 10-ton offset horn hopper car, and a 40' single-sheathed wood boxcar decorated for Western Central, Pennsylvania Railroad, and Great Northern. All have a list price of $24.98.

One of the more exciting new items on display in **Athearn's** (athearn.com) RTR Stealth series pre-production samples of their new 40 scale C-50-7 Southern Pacific steel bay window caboose. Future releases of the Genesis model will include SP class C-50-6, C-50-5, C-50-8, C-50-9, and Western Pacific's 480 class caboose. The initial release, due to arrive in February 2002, is for two versions of the class

C-50-7 W1508 caboose — in Oxford lettering in five road numbers, and in Roman lettering with three road numbers. An undecorated version will also be offered. Special features include sea through cross and end platforms, flush window glazing, and etched metal window screens. Each version of the ready-to-run model will be available with or without lighting. Lighted cars will be equipped with Zimo controlled by an on-board SoundTraxx® system with a built-in capacitor for non-flickering lights. Operating lights include a roof-mounted directional LED "drag rear" marker. Non-lighted cars will have LEDs installed in the marker lights with wires leading to the interior.

All versions of the caboose will come with new 70 ton trucks with simulated springs, rotating bearing caps, electric generator (shown in blue), and electrical pick-up capability. The trucks will also be available separately. See our exclusive "Ask" Click n Spin video at Athearn's SP caboose on page 52.

Akira Model Railroad Company (unknown scale) showed this preliminary engineering sample of a newly revised HO scale ITMC 5077 (2-Stage B) boxcar. The model represents an early 1970s-era PS1 design with a wide shot panel, and Youngstown door with a roller lift brace. Although not visible here, the car will have 9 rivets across 5/8. 33 custom draft gear. Akira plans to finish the ready-to-run model with .018" wire grab irons.

Among the new items featured in **Bachmann's** (www.bachmann.com) exhibit booth was this 4-6-0 (1-4-8) hp/1st diesel switcher. The ready-to-run HO scale model is expected to be ready for October and will come in both DCC ready versions at $89.95 each, and in a DCC equipped SoundTrack® version at $149.95 each. Decorating schemes will include Western Maryland (seen) (pilot) versions, Southern Pacific (orange and black), New York Central System #8613, Santa Fe (yellow scheme), Union Pacific (Nebraska Transportation Engine), and Erie.

Also on display in the Bachmann booth was an engineering sample of an HO scale 4-8-8 Mogul steam locomotive based on a prototype built by the Brentwood Locomotive Company. The ready-to-run engine will be available in November as a DCC ready model at an MSRP of $119.95 each and as a DCC-equipped version with SoundTrack® sound at $179.95 each. Both versions will be available decorated for Pennsylvania, New York Central, Canadian National, Santa Fe, Union Pacific, and Boston & Maine. Some details on the final production version may differ slightly from the above illustration.

Bachmann has set an October delivery date for a Baltimore & Ohio class EM-1 2-8-8-4 Yellowstone twelve HO scale steam locomotive with DCC. It will have an MSRP of $69.95 each. The model comes ready for a 'do-it-' SoundTrack® plug and play sound module which is sold separately at an MSRP of $119.95 each.

Bachmann's new HO and HO Accu-Speed locomotives will be delivered in October from all-new tooling that, among other details, reflects the increased length of the HO over the earlier HO. The HO and HO models will be offered as DCC ready versions with an MSRP of $90.00 each, or DCC equipped with sound on board at $140.00 each. The initial release of the ready-to-run models will be decorated for Canadian Railway, New York Central Unit 8, Lackawanna, Louisville & Nashville, Pennsylvania (single stripe Keystone scheme), and Baltimore & Ohio.

Bowser (bowser-trains.com) presented mock-ups of alumnox at NTS with decorated samples of its newest Montreal Locomotive Works Century C 630M locomotive series diesel locomotive. Upgraded from the original Stewart casting including, such details as enhanced radiator cooling louvers, anti-climber frame, front ladders and (usually Canadian National) both white stripes and anti-rivulets. All five locomotive models will have grooves on rod

w/dkt. and (Aux). Canadian Pacific (script or Multimark), Arkansas & Missouri, Cape Breton & Nova Scotia, Western New York & Pennsylvania, and Pacific Great Eastern. The Reading Lines locomotive shown here is from an earlier production run. Available this DC operation at $369.95, or with SoundTraxx™ DCC sound decoder at $394.95. See our exclusive 360° 12x4-in spin views at Bowser's U-ROAM! dated Jan 21 p.m. ET.

George Huntley demonstrates a Bowser H-2 trolley equipped with a special TechnoFX™ sound system that included an automatic sequence of the trolley gong, passenger step lights, pneumatic door opening and closing, motor generator startup and running, and the trolley light at the rear of the PCC moving on as the car turns in a loop. The system is still under test and should be available late this year.

New items in the **Kibri** (kibriusa.com) exhibit booth included a modern-right-hand cantilevered signal bridge that complements the previously released left-hand version. The modern HO scale double-track bridge comes fully assembled with four operating signal heads with a total of 12 separate micro LEDs. The nicely detailed plastic structure features etched metal handrails and walkways. The signal bridge has an MSRP of $89.95 each.

Also featured in the Kibri booth were preliminary samples of the third release of the company's HO 1:87 Tuff run. Five specific details on the 1970s yellow 77-ton cover passenger cars with Pullman-Standard trucks, appropriate bridge plates, and cut levers. HO versions are expected to arrive this month, with the N scale models due in the fifth quarter of 2021. (Click on model railroad hobbyist every GROUP, 2021, 3:15:52 p.m. ET to see our GROUP's exclusive interview at the National Train Show with Kibri founder and CEO Luigi Martori.

The Shortlines (www.shortlinesmodels.com) booth at NTS was full of activity with Nancy Wickman and Jennifer Ireland fielding questions from enthusiastic customers. Major announcements included details on another release of Blackstone Locomotive Works's 4-27-2 B-2 Mikado. Scheduled to arrive in the spring of 2022, the new production run will include a late 1940s version of #40 #39 with its pilot wheels cut. The run also includes #623 #3 in as a switcher with its unique drag hoses. All units will be sound-equipped. Non-weathered B-2-2 locomotives will have an MSRP of $475.00. Weathered versions will be listed at $550.00. Advance reservations close August 13, 2021.

Blackstone also announced a new run of its 1910 narrow frame and frameless tank cars with new road numbers. The narrow frame cars were built in the 1930s by mounting standard gauge tank cars on steel channel frameworks. They were equipped with arch bar trucks with a 4'-6" wheelbase. The USGX Kansas Gas (GRAMPS) tank car were originally built from standard gauge cars in the early 1930s. Many of the cars had the prominent steel letters emblazoned across the sides of the tank. The run will include three narrow-frame USGX cars with yellow lettering for road numbers 1313, 13008, and 13111. Also available are three frameless style tank cars with the "Gramps" logo and USGX road numbers 51176, 51180, and 51207. All of the variations will be available both weathered at $34.95, or non-weathered at $34.95. Delivery is planned for mid-fall.

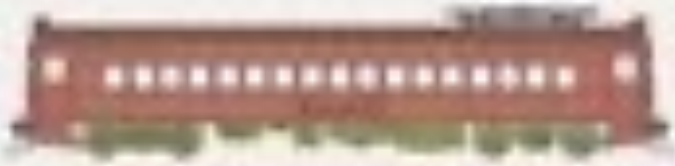
Dave Hussey, owner of **Cannon and Company** (www.cannonandco.com), showed a range of detailing components at NTS including two new diesel fans. At the left is a 36" cap-top radiator fan unit

on first-generation EMD diesels including F units, GP7/GP9, GP7/GP9, GP-35s 9918 and 5224. Item #F-1707 is priced at $28 for a set of four cars. On the right is a 48' coupling-hardware flat used on first-generation EMD diesels equipped with dynamic brakes including F units and GP7 and GP9. Item No. 1804 is priced at $4.50 for two cars.

Coach/Combine Lionel also has announced new and new-mold runners for its HO-scale 1930s 10-6 lightweight streamline commuter-suburban B-E-E cars. The cars have full interiors with nonmetric lighting that operates on both DC and DCC systems. The prototype B-E-E cars were used by many railroads, and the 85' length makes them suitable for operating on layouts with track radius as tight as 18 inches. New road names announced for locomotives include Southern Pacific (Daylight, red and orange), Southern Railway (Crescent, two-tone green), Rio Grande (silver and dusky orange), Royal American Unions (red and yellow), Chesapeake & Ohio (George Washington, Pullman green), Reading Pony Royal (Pullman green), and New Haven (Pullman green).

Based on positive responses from dealers and hobbyists, Jim Cheraso has decided to make a limited re-run of the HO-scale Chicago, North Shore & Milwaukee Electric liner. As with the original run, this release, set for late this summer, will be for four-car sets with full interior detailing and lighting priced at $1450.00. Additional coaches will be available separately at $169.98 each. Con-Cor will offer an optional add-on sound decoder that will also be computer set with the initial run of Electroliners. The decoder will be priced at $79.98.

Con-Cor is also taking reservations for an HO scale version of the New Haven Comet train set – a permanently coupled double-ended diesel electric streamliner that debuted between Boston and Providence in 1935. The locomotive prototype was built with federal funding by a consortium of the Goodyear Company and Germany's Zeppelin Corporation. Con-Cor's HO scale version will consist of a three-car set priced at $450.98. An additional coach will be offered at $149.98. The set operates on conventional DC and is DCC ready. An optional sound decoder is sold separately at $59.98. Con-Cor has a 40th model of the



Lionel operating in their booth at the National Train Show.

Lionel has announced plans to deliver its HO-scale Pennsylvania and Long Island MP54 MU commuter cars in October. The project involves three body types: coach, coach baggage combine, and baggage mail. Each type will be available with or without a pantograph in several different decorating schemes for both Pennsylvania Railroad and the Long Island Railroad. The scale-to-run models will have finished interiors with lighting, and will be capable of running off overhead wire if desired. An optional DCC sound decoder will be available. Complete details are available at www.lionel.com/MU-Powered-Offerings.

Athearn announced that Executive Director Ronald Reagan will be a happy citizen here on the Honey 4-6-6 number 2 Greenville 60' boxcar with corbel rear-style ladders, and a new EMC 4500-A high-cube gondola shown below decorated for CNW. See our exclusive MAT Click n Save at MainMatt's new 44 money-saving coupons!

Click on model railroad hobbyist.com/MAT_2011_NTS/ExtraTrain to see MRH's exclusive interview at the National Train Show with Kalmbach founder and CEO John Kalmbach.

This latest from **Fine Scale Models** (fsm-limited.com) is Wolfish Manor, an all-inactive HO-scale watchtower structure with a footprint of 8" x 3.5". A unique detail of the craftsman kit is the large laser-cut double doors at the front of the building. Other laser-cut features include clapboard walls, wood and shingle roof sections, skylights, corrugated metal roofing, and rolled paper roofing. Additional items include hutch panels, windows, detail-metal castings, assembly templates, and instructions. Although designed as a head-board house, the structure could easily be adapted to a small engine house. Pre-limited edition kit is priced at $69.95.

Great Lakes Models (greatlakesmodels.com) has introduced etched-brass street details that includes manhole covers, storm sewer grates, and sewer inlets. The HO-scale versions are patterned after real items located in Milwaukee — specifically at the intersection of West Duluth Avenue and South Wisconsin Avenue. The items, however, are generic and nearly identical to those used throughout the nation. A sheet of six sewer grates and inlets, or a sheet of eight assembly covers and rings sells for $3.95 each.

InterMountain Railway Company (intermountain-railway.com) demonstrated a pre-production sample of their forthcoming HO-scale wide-cab EMD F-diesel at the National Train Show. The test unit was authentically decorated like the Canadian National prototype.

InterMountain is currently booking reservations for several new HO-scale models with delivery scheduled for February/March 2013. The items include a USRA gondola in six road numbers each for CB&Q, Southern Pacific, C&NW, Southern, Missouri Pacific, Michigan Central, Monon, and Pennsylvania. The ready-to-run cars have a list price of $30.95 each. Also Pacific Fruit Express class R-40-10 reefers in several schemes including PFE (Overland Yarlet), PFE (Arctic Yarlet), PFE (1942 scheme), PFE (black and white) Yarlet, PFE (Express) (green), WFE and Western Fruit Express. The cars have an MSRP of $32.95 each.

Milwaukee Road HO-scale boxcars are also scheduled to arrive in February/March. They will be illustrated for Route of the Hiawathas. Route of the Hiawathas with original Apex- the late Milwaukee Road scheme with eagle herald, and a look-arm version without a running board. The cars have a list price $31.95.

Jay Bee Models has introduced precision metal wheelsets with built-in resistors to trigger signal and occupancy circuits. The HO-scale turned-brass wheelsets come in .28-, .33- and .36-inch diameters, and are priced respectively at $29.95, $32.95, and $34.95 for a package of twelve. The wheelsets are available with various resistive ratings from 1K to 30K ohms per axle. Multi-pricing is also available. To order or for additional details contact Jim Bennett at jaybeemodels@yahoo.com or phone 630-832-3635.

New products due from **Kadee Quality Products** (www.kadee.com) this month include a PS-1 covered hopper decorated as ERIE #77240 in the 1957 as-built light gray scheme. The ready-to-run HO-scale model is priced at $42.95. Coming next month is a PS-1 50' boxcar with 50' plate decorated as Western Maryland #30073. The car has a functioning cushion underframe and comes in the original 1955 as-built red oxide paint. It is priced at $35.95.

Scheduled for delivery in October is a Western Pacific PS-1 40' boxcar with a 7' Youngstown door. The HO scale model will be decorated in the 1951 as-built scheme with boxcar red paint. It will be priced at $34.95.

Bake USA (bakeusa.com) had good news for HO hobbyists, with information that it will release several 1:87 projects in the upcoming year. The first HO scale release, due later this year, will be a series of General Electric's 40-ton(B) diesel-electric switcher locomotive in the C&A (Big "Dash 8"). Decorating schemes for the ready-to-run #1,840(DC)# will include Union Pacific "Building America" #2780, BNSF Heritage II #9433, and Canadian Pacific "Golden Beaver" #9606. Pricing was not firm at press time but is expected to be in the $180 to $190 range.

Neil Stanton, the engineer who developed the versatile and powerful running Electro-power truck, demonstrated his latest idea in the **Rail-Ribbon Board Line** (rbbrd.com) N/T display booth. Called The Stanton Ryder-CAB System, Neil used a hand-held controller (called an S-CAB) to communicate, via radio signal, directly to a receiver, DCC decoder, and battery all compactly installed in the model locomotive. No charger is required as existing layout wiring be it DC or DCC. In fact, that system even works on non-powered track. If track power is available it can used to provide real-time battery charging to the onboard battery. Complete details and specifications are available at rbbrd.com/cab.

Rapido's (rapidotrains.com) display booth at the National T-Unit show was ably staffed by Bill Schneider and Dan Garcia, both knowledgeable about trains, and their company's products.

Modern, top (cover included the latest version of Rapido's forthcoming 53' General American Transportation (GATX) wood side trailer. All received some of the first details revealed since the preliminary test samples made its debut at the Cocoa Beach RPM Hotel in January. Rapido has developed a reputation for replicating car underframes as faithfully as the more visible features — and the GATX trailer promises to be no exception. Rapido is committed to making the model as accurate as possible, and expects to make additional adjustments in the tooling before releasing it for production. Jason Shron and his team can be commended for allowing modelers to customize their preproduction samples, and most importantly, for listening to constructive criticism with an open mind.

Road names scheduled for the initial release of the HO scale model include American Steam (built 2017, mid-late 1920's scheme), Delaware (built 2017, mid-late 1950's scheme with large fuel ahh), Sagaline (1939 as-delivered scheme), GARX - Refrigerator (1938 as-delivered scheme) Hornet (1937 as-delivered scheme), Huggies's (built 1940, mid-late 1950's scheme), Keegan (1940 as-delivered scheme with large hatch), Marvin Miller (1940 as-delivered scheme), Oscar Meyer (built 1939, late 1940s scheme with large hatch), Swift (built 1937 with 1938 scheme on red body), Tobin Packing (built 1937 as-delivered scheme) UNTX - Refrigerator (built 1938 as-delivered scheme), and unidentified. The roster will have an MSRP of $34.95 each. Availability is expected late this year, but Rapido who manufacturing quantities to fill reservation only, so interested modelers should place their reservations without delay.

See our exclusive 360° Click-n-spin view of Rapido's new GMA trailer car on page 30!

Rapido's beautiful HO scale 53' Canadian box car display along with handsomely decorated 1984 and 1988 cabooses. Although Rapido's booth was too small to operate the full-length Canadian, Dan Garcia arranged to run the train on the Edmonton Society of Model Railroad Engineers' large modular layout late Sunday afternoon. The complete Canadian — all ten cars with an 4-8-4 bolt-up at the point — looked magical as it snaked its way through the layout's beautiful scenery.

Rivarossi/Hornby (rivarossi.com) is taking reservations for the first time's short limited run kit. Named Keystone Hill, the Craftsman-style kit is based on a structure built in Pennsylvania in the late 1800s that is still in use today as a lumberyard. Among

the kit's many features are laser-cut sides using Northeastern lap siding wood and a stone foundation cast by Smalltown Docs. The finished HO building has a footprint of 12" x 4". The HO scale kit is priced at [illegible]. Please see our N scale report for an illustration of a finished model of the Keystone Mill.

Sidetrack Lane [illegible] unveiled its new Golden West Fruit Packing & Cold Storage complex at NTS. The HO scale kit is offered in two parts to accent out the roof as well as the construction time. The Fruit Packing section sells for [illegible], the Cold Storage section for [illegible]. When purchased together, the cost is [illegible]. Features of the complex include laser-cut structural components, cast detail parts, Grandt Line doors and windows, and a complete selection of appropriate graphics.

Smokey Mountain Model Works has a soon-to-be-released HO scale Southern Railway Pullman-Standard "Shenandoah" aluminum gondola. Using drawings provided by the Southern Railway Historical Society, the thing developed the patterns for the model using 3D CAD and rapid prototyping technology. The kit consists of a one-piece resin body casting, urethane underframe, hidden weight, and Kadee #[illegible] scale couplers. Additional details include Tichy AB brakes, Ozark grab irons, and Intermountain wheelsets. Shenandoah is available with vermilion (1960 original) or green (mid-1960s) decals. The craftsman-kit is priced at [illegible] each. To order, visit [illegible].

During this year's National Train Show, **Sargent Scale Models** [illegible] announced the immediate availability of new HO scale Baltimore Steel quad hoppers – with coal loads. Variations include Union Pacific (4,100-18 Draught car set with large white Union Pacific on the side; and 4[illegible] Union Pacific in 100-ct/4 with large white Union Pacific on the sides, and 4[illegible] Union Pacific, 4-100-18 (black body with yellow ends, and large white Union Pacific on the sides). Delaware & Lake Erie (4[illegible] (set of six road numbers, plus unnumbered), Chesapeake Coal (4[illegible] (2 road numbers, plus unnumbered), Illinois Central Gulf Controls (4[illegible] (6 six road numbers, plus unnumbered), Louisville & Nashville (4[illegible] in six road numbers, plus service), All unnumbered models come with a decal set of assorted numbers in appropriate fonts. The ready-to-run models of the Baltimore Steel quad hopper are $[illegible] each with discounts available for quantity purchases.

Sargent also announced the availability of its 4[illegible]' 6" Jennbelt fishbone drop end gondola in seven new paint schemes plus two previously released versions with new numbers. In addition to the Pennsylvania Railroad (PRR) (known here [illegible] early shadow keystone on PCR with [illegible] years-date in 12 numbers), the HO-scale model is also available decorated for Conrail (CRR) (Conrail lettered in six numbers), Penn Central (PCR [illegible] green repaint scheme in six numbers), Sacramento Northern (SNR scheme with black body and yellow lettering in three numbers), Southern Pacific (SP) (SP) black scheme with white lettering

in six numbers), Southern Pacific (1-70) 12 (1923 FCB scheme with three numbers different from previous releases), Southern Pacific (Gothic scheme with 1966 repaint date in 12 numbers), Wabash (1937 black scheme with three numbers different from previous releases), and Western Pacific (original 1939 scheme with black body and yellow lettering in three numbers). Tangent's ready-to-run HO-scale gondolas are equipped with 70-ton AAR 6-1 Ride Control trucks with all-metal wheels, and Kadee® couplers with #58 bore. They are priced at $30.95 each with discounts available on quantity purchases.

Tangent will release its acclaimed Pullman-Standard PS-2CD 4000-covered hopper in several new road names, in addition to the CNW (Omaha green-capped scheme with Employee Owned) pictured above here. Tangent also has the car decorated for Methanex, Sojitz, and Cyprus Fe (original 1963 mineral red paint in six numbers), Great Western Malting 40000 (original 1963 gray scheme with Rocky Mountain logo in two numbers), Rock Island (1970s ROCK blue scheme in two road numbers), and Rock Island (original 1962 gray scheme in two road numbers). The ready-to-run models come with Kadee® couplers, and 110-ton ft-11 trucks with metal wheels. They are priced at $42.95 each with quantity discounts (when purchased direct from Tangent). An undecorated kit is available for $35.95.

The Sussex Mountain Model Railroad Club is selling a Pennsylvania X29 boxcar with shadow keystone herald. The model is based on a **Red Caboose** kit and features include a works at brake shaft, flat plate and .088 (or) ft truss rods with interchange metal wheelsets, and Kadee® couplers. The HO scale model is available in six road numbers at $44.95 each plus shipping. To order visit shop.sussexrr.org or contact the Texas Assistant Club at (682) 587-8200.

MidWest [illegible] had several new and future HO scale items on display at their IRM booth including early samples of the new 10 Capitol passenger cars, CF (pencil) interior and the preliminary engineering sample of a Pullman Standard 40' coal gondola that has been successfully designed to allow customers to assemble an inexpensive unit train. The car is the introductory model in a new series of affordable products to be marketed as MidWest "Maximine" series.

Click on [illegible] to see MRH's exclusive interview at the National Train Show with MidWest marketing VP Michael Stephens. You can also view our exclusive 360° Click-n-Spin view of MidWest's new Santa Fe high-level Vista Dome coach with illuminated [illegible].

MidWest has scheduled another release of its 40' CB&Q/GN gondolas to arrive in late February 2012. The cars are decorated with Burlington yellow and gray as motor

Union Pacific "City" series passenger cars. Road number decals are supplied with the ready-to-run models. Additional details include factory-installed grab irons, and etched windows. The consist will include a baggage car, a 48-seat diner, a cafe lounge, and the baggage-dormitory car illustrated above. The cars will have an MSRP of $49.98 each.

Also due from Walthers next February are PS-2CD #457 (3 covered hoppers with roof hatch interior and center discharge gates. Special features of the Platinum series cars include factory-installed grab irons and other details. In addition to the Wisconsin Central version shown here, the cars will also be available decorated for BNSF, Wisconsin & Southern, Canadian Pacific, GSPX. The Andersons-Arch, BNSF, and ATSF. The ready-to-run HO scale models will have a list price of $37.98 each.

Walthers has scheduled a February delivery date for the twin run of the Pullman-Standard 50' auxiliary cube boxcar. Upcoming schemes will include Burlington Northern (Cascade green), and C&NW (Action Road slogan on orange and black car body). Both cars will have Superior doors. Youngstown doors will be used on a CNW (Bonanza red), and Chessie System/C&O cars shown here. The HO-scale ready-to-run models will have an MSRP of $19.98.

N SCALE PRODUCT NEWS

Bachmann Trains announced that it will be the occasion of the National Train Show to announce a model begin shipping an N scale Mikado (4-8-2) diesel locomotive in early September. The ready-to-run model comes with a dual-mode Hobbie sound/DCC decoder and DCC installed for speed, direction and lighting. Mechanical features include eight-wheel drive and maximum brass worm bearings. In addition to the PRR unit shown here, other roads will include Boston & Maine (maroon, yellow and black), C&NW (yellow and black), Western Maryland (spoon lettering, black and yellow), Mountain (black and gray with Sierra gold), and New York Central (black with lightning stripe). The N (2-8-8-2) will have an MSRP of $129.98.

Also scheduled to arrive from Bachmann in September is an AAR 50' 6" outside braced sliding door boxcar decorated for Wabash, Milwaukee & New Jersey Pacific, Providence & Worchester, Chesapeake, and Burlington Northern. The N scale car has a list price of $18.95.

Kato announced that it will produce a 50' steel boxcar in N scale. The prototype car will be a Pullman-Standard design. Road numbers will be available for Union Pacific, Western Pacific, Missouri Pacific, and Texas & Pacific. The cars will have a list price of $19.98.

customer suggestions, this tooling has been modified to minimize the protrusion of the coupler beyond the end sill. The change allows for broader curve radius and closer coupling.

also featured on the BLMX booth were preliminary samples of the third release of the 60' 1484 c.f. flat car. N scale versions of the 1970s-era yellow TTX cars are due to arrive in the 4th quarter of 2012. Click on model railroad industry convention_2012_NTX.html to see MRR's exclusive interview at the National Train Show with BLMX founder and CEO Craig Moffatt.

InterMountain Railway Company (intermountain.railway.com) is currently booking road-numbers for an N scale USRA gondola with delivery scheduled for mid-to-late March 2013. The cars will come in six road numbers each for CB&Q, Southern Pacific, C&NW, Southern, Missouri Pacific, Michigan Central, Monon, and Pennsylvania. The ready to run N scale models have a list price of $24.95 each.

Kato USA (katousa.com) plans to deliver its N scale 20th/21st/22nd diesel this December decorated in the classic and crimson scheme of the Alaska Rail Road, as well as the more familiar liveries of Union Pacific and Canadian Pacific. The 16" and 17" cuts will come in two-and-three road numbers. Prices were not firm at press time but are expected to be in the $150 to $220 range. Reservations are due August 30, 2012.

In collaboration with custom model builder Charlie Hopkins, Kato USA is offering customized versions of its N scale GS 4-8-4#5, "Yukon." The models will have several enhanced details painted on, such as stripes on the cross white-painted safety railings on both the front and back of the locomotive, painted coupler cut bars, cross windows, and detailed fuel tanks. They will be priced at $180 with delivery expected in late September. For more information visit katousa.com/customize.php?mode_page=models/hopkins40_76_140.

Wiljan Kits (wiljankits.com) is taking reservations for an N scale craftsman kit for Keystone #88. The craftsman style kit is based on a structure built in Pennsylvania in the late 1800s that is still in use as a lumberyard. Among the kits many features are laser-cut sides using Northeastern log siding wood and a stone foundation cast by Waterloo. The finished N scale building has a footprint of 6.5" x 3.5". The kit is priced at $49.95.

Soundmax® (soundmax.com) has a new system called SurroundTrack, that uses multiple speakers to provide realistic sound for N scale and small narrow gauge equipment. There are six speakers on which sound-related components on the locomotive. The system uses multiple audio speakers strategically placed around the layout. Using digital signal processing (DSP) technology in conjunction with block detection technology, SurroundTrack reproduces the sound made by each train on the layout and directs the sound to the speaker

closest to the train's location, as a train moves along the tracks, SurroundTrack makes continuous adjustments to the sound level of each speaker so that the sound appears to follow the train, using a cross-fade algorithm that factors in train speed, direction and distance between speakers. The sound is switched smoothly from speaker to speaker. Click on [illegible] to see MRH's exclusive interview on the National Train Show with SoundTrack sales manager Jennifer Ireland.

Robinsons [illegible] has 8 scale 66'6" High-Cube eight-door auto-parts boxcars in several new paint schemes including CSRD, CSK, GTW, Norfolk Southern, and Penn Central. Visit the above web site for details on subtle variations in the paint schemes and road numbers available.

NEW DECALS, SIGNS AND FINISHING PRODUCTS

Tichnor specialist, **Custom Trains** [illegible], has released an HO scale decal set (LN 040) for Philadelphia & Wave Chester Traction Company and Philadelphia Suburban Transportation Company. The lettering set can be used to accurately decorate either the 1914 built wooden 40-64 series interurban motor shells available from ANO Enterprises (plans only) or the JADA 1931-1936-built 840 40-76 series center-door interurban motor shell kits available from Westerbrooks by Erik (mrcoderbrooks.com). Item CN-044 has a list price of $17.95.

The newest decal sets from **Jerry Glow** [illegible] include six Amtrak 27' wood-sided coaches in both the early lettering scheme or with the revised logo. A billboard style is also available. Other new decals include a Charleston & Western Carolina steel-sheathed 40' x 8'6" double sheathed boxcar. Jerry's decals are available in all scales. Visit the above web site for pricing and ordering information.

Microscale [illegible] has released eight new decal sets that cover the life of Amtrak locomotives. Set -100 covers Amtrak Phase I (1971-1973) E-8 (GP40P and P40) locomotives. Set -423 Amtrak Phase II GP40P, P40PH, and P42 locomotives. Set -424 covers Amtrak Phase III (1980-1988) F40PH Horizontal locomotives. Set -362 covers Amtrak Phase III (1980-1988) P40DH, P32, GP40P, and P42 locomotives. The lettering sets are priced at $3.75 for N scale (add $1 as a prefix to the part number), and $7.95/for the HO sets (add $7 as a prefix). Coming next month are new sets for Grand Northern Big Sky freight cars, and white Southern Pacific Post Express reefers.

Blount Horizon Shops [illegible] has HO scale decals for pre-war Pennsylvania Railroad class G5a and G5g Circle Keystone boxcar cars. Set HO-G5A will letter up to eight cars. Also new is a large decal set for four pre-war Canadian Pacific connector hoppers including Ophelion, LHA, Hopkin Holland Canada, and SHPX. Both sets are priced at $6.50 each.

About our news and events editor

Richard Bell writes our news columns under the byline of The Old Railroader. He has been writing about the model railroad trade for various hobby publications and in the media.

He enjoys building models, particularly wheelsets, some of which appeared in the June 2004 issue of *Model Railroader* magazine.

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The Tall Steel Viaduct

FROM INDOORS TO OUTDOORS
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CVP PRODUCTS

BY ERIC POWELL

Where the steel hits the road

The Federal Railroad Administration works to make at-grade crossings smarter and safer

Intelligent Grade Crossings will warn motorists and trains that approach is imminent. (Illustration courtesy of FRA)

Train crews and motorists may have the ability to "see" one another earlier than ever thanks to "Intelligent Grade Crossings" currently under development through the Federal Railroad Administration's Research and Development Office.

Since the dawn of railroading, one of the most common threats to the safe passage of trains has been grade crossing collisions between trains and motorists — either unaware of being in harm's way, a vehicle becomes disabled on the tracks or, perhaps worst, one tries to beat the train.

According to Irene Gilbertson, chief of signal, train control and communications for FRA's Office of Research and Development, the technology that makes Intelligent Grade Crossings viable is part of a larger federal initiative at Transportation's John A. Volpe National Center, which will enact new levels of dangerous road conditions, crossing geometry, or accidents and/or vehicle-path and route prognosis.

Applications and demonstrations for Intelligent Grade Crossings are all part of the Department of Transportation's Intelligent Transportation Systems Program, a major push to use sophisticated sensor and communications technologies to create more efficient and user-friendly highway and transit systems.

"The objective is to inform the drivers about the railroad," Gilbertson says. "It's been thinking of providing a system that will bring approaching train information inside the vehicle to the driver. We've got a lot of technologies, such as GPS, that are readily available to use. We're integrating active information — warning systems and the train speed — and telling the driver a train is approaching or it could send audio/voice warnings."

The system will warn a motorist via both an in-dash or in-vehicle warning and/or through an in-pavement GPS-based technology such as "blackbox or Cadillac" systems or on-the-pavement, although space issues with the pavement-based unit are to be considered.

Gilbertson says Intelligent Grade Crossings will do more than just add another level of safety at crossings already equipped with flashers and gates. How about at those vast tracts approach grade crossings on railroads slightly greater widening businesses' desire to purchase or train-ing lights were not approached?

"Quite often, trains go parallel to the tracks and have sidetracks with 40-degree skid cross markers to turn the gates," he says. "We feel that this system will give us distance warning of an approaching train. Right now, if only train was at least 3,000 meters into actuality as the locos at the head on the display that we need to have a gate force around the crossing for the approaching car."

Arguably the greatest challenge, though, will be to create the motor vs. rail boundary between train entering a grade crossing and motor vehicle that are taking another route.

"Obviously we don't want to give a false warning for a car that's not going to cross the track [that] the car with the appropriate trajectory toward the track will be issued the warning of the train," Gilbertson says.

The FRA standards were to be assigned over the Positive Train Control system. Congress mandated for railroads in 2008, the last PTC regulations are designing tools will work moving warning signal systems.

The next generation PTC, however, will enable a locomotive engineer to see data from local environment traffic management control systems, including a set of offset of any a life-long crossing crossing ahead. Hardware such as optical and infrared detectors cameras and radar will make sure vicinity of the grade crossing "ahead" the area on the road where a motorist can not could possibly be in a train is approaching.

Gilbertson is quick to point out that the technology to make grade crossings safer has awareness already exist; however, so the aims to make Intelligent Grade Crossings available for implementation continues to confront all PTC components.

"With current technology we can detect the approaching train and calculate its speed. There are microprocessor-based crossing controllers that don't take a real genius guy a while," he says. "The difference now is right there is a crossing control device, so we just need to broadcast it via a short range communications system."

In terms of real-world applications of Intelligent Grade Crossing technology, Gilbertson says work plans are more or less in terms of implementing advanced safety technologies than others, while another has an ongoing project showing an interest in Intelligent Grade Crossings a high speed rail line like Illinois, Michigan, Alaska, and North Carolina has among the locations cited to date as evidence to and test the grade crossing system.

"We can develop the technology and perform it, but we cannot force railroads to use it," he says. "We have a list of railroads programs that [we] training and conferences or [on] these [have] problems to train and to use authorities, but it's up to them whether they train and where a railroad decides."

The "Southern Belle"

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KATO

The *Kansas City Southern "Southern Belle" paint scheme* is a homage to the KCS's passenger trains which bore the same name in the 1940's and 50's – sporting sharp, distinctive bands of red, yellow, and silver colors atop a base of dark Brunswick green. This paint scheme was re-introduced by the KCS to its modern freight equipment in early 2007, *and celebrates the proud heritage of what is one of the country's oldest class one railroads still in operation today.*

The KCS "Southern Belle" is available now at hobby shops alongside the re-released George Bush and D&RGW Heritage SD70ACe's!

Item #		Description	MSRP
176-8403		N EMD SD70ACe UP [Dash 8] Heritage) #1984	$139
176-8411		N EMD SD70ACe George Bush #8341	$139
176-8418	new	N EMD SD70ACe BNSF "Swoosh" #9373	$139
176-8419	new	N EMD SD70ACe BNSF "Swoosh" #9394	$139
176-8420	new	N EMD SD70ACe CSX #4838	$139
176-8421	new	N EMD SD70ACe UP "Plug" #8883	$139
176-8424	new	N EMD SD70ACe UP "Plug" #8918	$139
176-8427	new	N EMD SD70ACe KCS "Southern Belle" #4004	$139
176-8428	new	N EMD SD70ACe KCS "Southern Belle" #4007	$139

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A large electric interlocking machine fills most of the second floor at Alton Junction. The lever man stands in front of the 89-lever interlocking machine while the train director works at the communications desk. Ralph Lindstrom

Chicago's Alton Tower was a busy place in the 1950s. Here the Atchison, Topeka & Santa Fe and Illinois Central routes cross the Pennsylvania's four-track Bradley and the Chicago & Western Indiana tracks used by the Chicago & Eastern Illinois, Erie, Grand Trunk Western, Monon, and Wabash to access Dearborn Station.

The interlocking tower, railroading's traffic light

Manned interlocking towers once guarded most intersections where railroads crossed at grade. These structures came in many sizes ranging from a simple ground-level office housing an interlocking machine on a pair of single-track lines to large masonry structures that served busy junctions like the one shown here in downtown Chicago.

The mechanisms of American railroads' foremost rule of the road dictate an interlocking as "the arrangement of signals and signal appliances so interconnected that their movements must occur and each other in proper sequence and for which interlocking rules are in effect. It may be operated manually or automatically."

An interlocking machine was the heart of any interlocking tower. The machine controlled movements and signals and a mechanism that prevented an operator from performing conflicting train movements.

Mechanical machines used rail-borne movement as the lever's base. Nicknamed "interlocking interlockings," it took a lot amount of strength to unlock and move the levers and the machine rods, pipes, or wires that actuated the switches and signals. By World War I ended, electric and interlocking machines came along that were easier to operate and maintain, especially as yard swelled. The electrified versions could also control an interlocking that extended farther than the tower.

Winning brains The ones who operated an interlocking tower are called a leverman, but this job was often combined with an operator's position as he could sight and detect train orders. Larger interlockings or urban terminals often employed several levermen supervised by chief's desk located at a main entrance.

A route diagram was normally hung from the ceiling. As a train approached the limits, it actuated an occupancy light and an annunciator bell to call attention to its arrival. Knight knew normal through the plant on a train order, train arrived here, had that track route (authority) had proceeded. Long interlocking might entail hundreds of levers at a time so long as their routes didn't conflict.

The supervisor commenced work with all of his subtasks and worked as the result to pandemonium. Nothing can the rules for the work train. There be knockers outside signs that were used when the appropriate signal. If any train knew exception of position, the interlocking machine would lock out the signal lever so it couldn't be opened until everything was properly aligned and locked.

Once the signal lever was pulled, the interlocking machine "locked up" the route to display a signal to proceed until the train passed. After the train cleared all of the track circuits in the route, the interlocking released the locks.

If necessary, the cleared signal could be "knocked down" to stop a train, but this brought a whole string circuit into play. Each signal circuit was protected with a timer that was an electrical equivalent to the latest train's normal stopping distance (maybe 1 to 3 minutes). The lever was held in "reset" for this, and kept while the timer ran through its cycle. Meanwhile, the permanently cleared route remained locked so none of the levers could be moved or over the remaining train couldn't drop down on the interlocking. After the train cleared, everything unlocked and normal operation resumed.

Even so, the whole experience job was to keep all of the train's trains moving without delay. – Jim Hedtgen, assistant editor

Send your questions about prototype railroading or locomotive operation to Model Railroader magazine, P.O. Box 1612, Waukesha, WI 53187, or e-mail mrr@kalmbach.com. We may not see you'll answer all the questions we receive.

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Amtrak exhibit train on a roll

A mannequin wears the first on-board service uniform complete with shortened 'skinny British' version

Richard Lyman assistant makes a lady before the engine cabs. (The cab heard was since 1950 and is perhaps the last using wood with the engineers' seats lowered with shaped cushions.)

After a two-weekend late June visit at Historic Lyndon Broadway And Street, the train will head to Paris England in July. Then it's westward to San Pedro, with details of its construction, commissioning, crew work there and how more are considered.

To facilitate quick pull operations, the six-train cars are a new innovation called cars pulling up at the Beach Lyman, Utah, always along with the rest of the cars. But earlier when they have had a second running at "cabbage" cab baggage cars, for. We begin an engineer assistant and attend an engineer work team and power operation which will cause of heavily on other assignments ways on whether more don't work.

>> National Train Day draws crowds across U.S.

National Train Day drew tens of thousands to festivals sponsored events in Los Angeles, Chicago, Washington, and Philadelphia, featuring equipment displays, train rides, concerts, and children's activities. Top prize ski Benjamin Biggs amateur national [illegible] No. 486, is historic past, from the window of an Amtrak train at Washington Union Station. In addition, thousands more attended rich locally sponsored events at train stations, museums, model railroad clubs, and other venues across 40 states. This year's activities, held May 7, marked the fourth annual Train Day celebration. [illegible]

Through the train will usually down a world-powered heritage Library locomotive (see "Caution!" page 44) between weekend stops, actually using it on the road will be a challenge. "There's no general formula to follow for train maintenance," Anderson said. Because each trip will be determined by the crew combined, one is availability and whether the equipment can satisfy the several industrial a scheduled stops. But the crew's dispatcher might assign it on with at most its stops, looking at good as ever!

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The ultimate collector's issue from Trains magazine keeps you up to speed on developments and trends in the engines that move the nation.

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BY JOSEPH R. CALO

Big machines aid New York rail link

Long Island Rail Road advances the largest transportation construction project in the country

The trailing gear of the tunnel-boring machine with muck cables and hydraulic air is shown in one through Queens, N.Y. Here it rests at Sunnyside Yard. [redacted]

The access pit for the east and the mailbox for Queens East Side Access tunnels 3 and 4.

"One day in the not too distant future, a conductor will say 'right single ninth' and have no one here spoken on Long Island," Helena J. Williams, president of the Long Island Rail Road, says. "Then the East Side Access project is complete, connecting most LIRR customers to work in the area the about 160,000 daily riders who now travel to Penn Station and then ride a subway, bus or walk to Manhattan's East Side," she says. The project will also reduce passenger crowding at Penn Station and, as rail service and mobile labors North make to access Penn Station, the LIRR East Side Access project will help to ease congestion at Grand Central Terminal.

When it is finished, the new extension will bring LIRR service to a new 11-track underground train complex beneath Queens and Manhattan. The project includes the construction of new tunnels, caverns and passageways, as well as the modification of existing LIRR facilities. The project is being built in four stages, with the first stage scheduled for completion in 2013. The final stage is expected to be completed in 2019.

The project is being built by a joint venture of Skanska USA Civil Northeast Inc., Traylor Bros., Inc. and J.F. Shea Construction, Inc. The joint venture is using two tunnel-boring machines to excavate the tunnels. The machines, which are each about 300 feet long and weigh about 1,000 tons, were built by Herrenknecht AG of Schwanau, Germany. The machines were assembled in a cavern at the Sunnyside Yard in Queens.

The tunnel-boring machines are designed to excavate the tunnels while simultaneously installing the concrete segments that will line the tunnels. The machines excavate the tunnels by rotating a cutting head at the front of the machine. The cutting head is equipped with disc cutters that break up the rock and soil. The excavated material is then transported out of the tunnel by a conveyor system that runs through the machine and the tunnel. The conveyor system consists of a series of belts that carry the material to a muck car that is pulled by a locomotive. The muck cars are then emptied at a muck-handling facility at the Sunnyside Yard.

The tunnel-boring machines are also equipped with a segment erector that is used to install the concrete segments that line the tunnels. The segments are delivered to the machines by a train that runs through the tunnels. The segments are then lifted into place by the erector and bolted together.

The project is being built in four stages, with the first stage scheduled for completion in 2013. The final stage is expected to be completed in 2019.

The first one of the tunneling machine [illegible] is the 15-foot-wide digging face.

What's left to do?

- 22g in area of tunnel beneath Tehachapi Yard
- Build platforms, a concourse, 21 elevator shafts, 57 escalator shaft openings, and tunnel linings in Manhattan.
- Reconfigure transit interlocking.
- Construct a portal track to cross Park to enhance Port Washington Branch service and Broadway Junction Terminal (enables Hudson shuttle train service to link up with future Grand Central Terminal-bound trains)
- Install track, switches, and signals to complete East Side Access

NJ Transit debuts dual-powered loco

NJ Transit unveiled its new dual-powered ALP-45DP at Penn Station in Newark, N.J., on May 11. The agency purchased 26 of the locomotive-built locomotives, which can run under both diesel and 11-kV electric power, for about $200 million.

Build a set of meters for your workbench

Model Railroader's DC motor test includes a voltmeter, an ammeter, and a milliammeter to measure locomotive current use.

Single-pole double-throw switch

The white wire connects all three meters to one DC terminal on the power pack. A green wire runs from the voltmeter to the second DC terminal and one rail. Then the yellow wire connect either the ammeter or milliammeter to the opposite rail.

to see all your wonderful videos. I noticed an electronic test with three large numbers sitting on the work bench in the background. I've never seen something like this anywhere else, so I'm wondering what it is for? Adrian Stanley, St. Louis

I built this set of meters some time ago to help test DC locomotives on Model Railroader's project circuits. It's an aluminum box that holds a lot of those large Simpson meters that we used to use. The picture has a usually for myself, where I needs, as the original that included only a voltmeter and an ammeter. When the new digital meters we started were introduced, I had no add a milliammeter so we could read their smaller changes in current.

The three meters are wired so the two can be connected between a power pack and the test track or locomotive. A single-pole double-throw (SPDT) toggle switch lets the meters detect up to 10 amps either the ammeter or the milliammeter. Large locomotives are tested with the ammeter, which has a range from 0 to 1 amps. Most smaller models even many can motors we run use the milliammeter, 0 to 1 amps, which indicates up to one. the meter's entire scale.

I often use my a great deal of time improving your locomotive performance, most modelers won't need all three meters. However, I've found that I unhook back and forth fairly often.

Most electronic suppliers sell a wide variety of meters in many different sizes. When I did a Google search for "DC panel meters," it gave me a list of 10,000 places to check out! The meter prices ranged from $5.95 (each) at some surplus outlets to high-quality meters costing around hundred dollars each. However, the Simpson meters similar to the ones I used previously sell for about $40 each. Jim Dodge, senior editor

Diesel shop size

I'm building a layout and plan to use the Walthers diesel house. However, my lot is more restricted, so I need to know the track spacing to complete my track laying. Can you provide the track spacing of the structure's tracks and how much room I should allow on both sides of the building? Darrell Wells, Lebanon, N.H.

The Walthers diesel shop has three tracks common inside the building and they're spaced on 5½" centers. The shop is 9½" wide and 16½" long with the end of the track on the structure's center line.

On a plank you could probably space additional tracks about 5½" away from the center to either outside shop track. However, most shop buildings have dimensions around them to provide track access for deliveries. Viewing for the dimensions would place the nearest outside track about 1 or 2 inches away from the structure's walls. Technicians are commonly added along the driveway to protect the shop walls. J.H.D.

The Walthers diesel shop accommodates three inside tracks and includes a well-detailed interior. It would be a good candidate for interior lighting and superdetailing of its work areas.

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WORKSHOPTIPS

Wood stains

Five sample packets of stain provide a wide variety of finish colors that author Bruce Petty uses on his HO scale fixtures and wood structures

A shower's color match styles my thumb like clapboard back on a fixture or a freight platform, so I've been using two sample packs of wood stain for these projects. It saves any from having to buy a full can of stain for small projects.

The fixture deck shown in the photo below was stained with Varathane Dark Walnut from a sample pack, and after I used the finish I applied color to add a little darker hue to the fixture that represents grease that have been replaced since assembly.

One bit of caution: Be careful to keep the glue off the deck surface, as it'll cause uneven absorption of the stain.

Wood stains are sold in many different shades, and a lot of colors are usually available. The small stains that sell the stains usually have sample charts and packets on display so customers can choose and compare the various colors of stain. Bruce Petty, Hanover, Ind.

Wood fixture decks take a beating in service, and they're often treated with a preservative. When we deem them at least a few replacement boards.

Hometime. Tips will pay $25 for published tips. Send your modeling and layout-building questions and tips to: Workshop Model Railroader magazine, P.O. Box 1612, Waukesha, WI 53187, or e-mail workshop@kmtg.com. We regret we can't answer all the questions we receive. There is no payment for questions we use and by-name publication.

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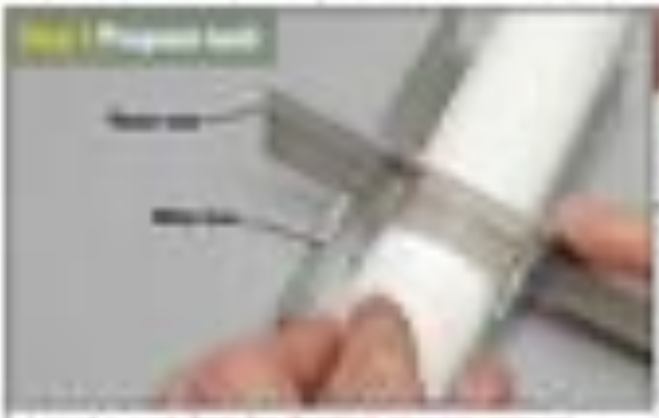
Model an LP gas plant on a curve

Cody Quiros used a story in the March 1990 issue of Model Railroader as inspiration for his propane plant on the Milwaukee, Racine & Troy. Photos by Jim Forbes and the author, except as noted.

Modern Continent's one-way (OK) route Milwaukee, Racine & Troy has been a hub of activity recently. In the February and March 2017 issues, I'd planned how I added a component and overhauled, respectively, its complete line. Others in my area, I modified my industry for the current railroad. With an early 4-7" since between the track and the buildings, every-what limiting my options, what looking around more ideas, I decided a compact liquefied petroleum (LP) gas plant would be a perfect fit.

The inspiration for this industry came from an article by Cody Vasquez in the March 1990 *Model Railroader*. The article included scale drawings of a propane complex in Peru, N.Y., that had tank storage tanks and a small office for handling gas.

When the LP gas plant tanks to see in motion up for on arrival. Unlike many customers, most of the activity that happens to plant sight, giving you the opportunity to model a scene that will get the attention of visitors and operators.



I used a work train that Walthers propane tanks on two 50ft DOD, out of production. Plasmach offers a propane storage tank that could be used instead.

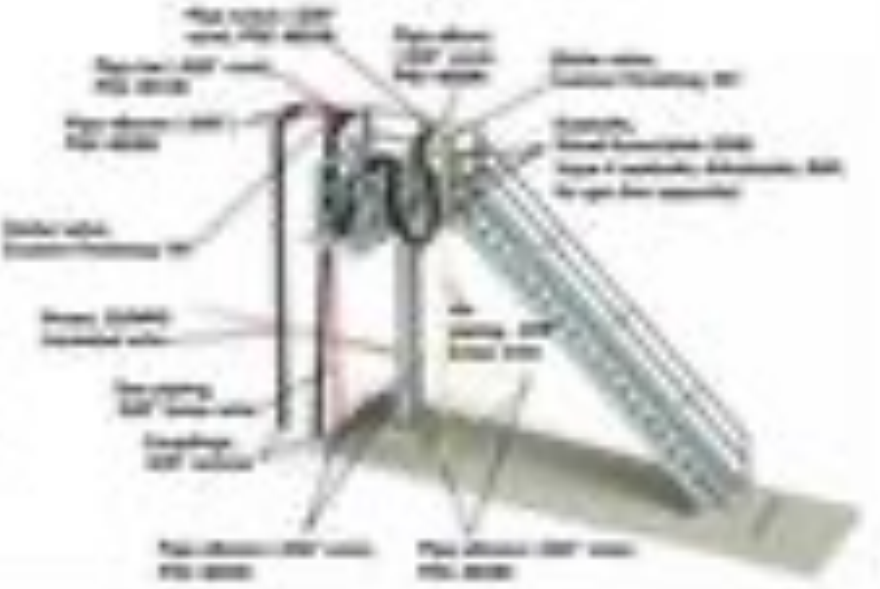
First, I removed the from the tank using a razor saw and 32 teeth per inch and miter box. I made the cuts along the molded weld seams.

When assembling the tanks, I used popsicle sticks and welding sticks to make the seams between the tank halves look realistic. Unfortunately, in the process I removed portions of the molded weld seams.

I replaced the seams with Archer Fine Transfer Lettering dry transfer decals (AFR6012). I cut an area as I could to the panel lines to eliminate excess decal film.

After applying the decals onto the regular Vaseline I sprayed the tank with Polly Scale Light Undercoat Grey to ensure the final colors would cover evenly. I used an airbrush to paint the tank light blue. I used Testor Model Master Metallic Silver and the satellite Aluminum & Marine Blue.

Tool cut-out



Building the office

Building the office (cont'd)

Finishing is your way to customize the walls. To give the brick wall some extra strength during the assembly process, I installed the roll-up door and personnel doors. I removed the exterior casing on these doors so they'd seat flush with the cylinder block.

I used .040" plasti-sheet for the roof and shingle strip for the trim and roof decking. The .040" x .100" styrene strip braces the walls so they don't warp.

I built the shelving using .040" plasti-sheet and braced it with .050" x .100" styrene strip.

I painted the top of the building floor Polly Scale Concrete and the sides Rattle White, as you'll see in the next step. The full-size sheet had a rub-text, so I added that detail with HO scale 1 in 8 letterstock. I stained the wood with an India ink wash (prior to installation). I attached the pinewood with rust-strength white glue.

The finishing touches

Unfortunately, I couldn't find doors and windows that were exact matches to the drawings, so I had to enlarge the openings. I began scored, first the right door and window openings before cutting the openings.

With the door and window situations resolved, I painted the building Polly Scale Rattle White and the doors and trim Testor's Model Blue. After the paint had dried, I installed the windows and side personnel door.

I glazed the windows with .010" clear styrene.

For roofing material I used a piece of 220-grit sandpaper attached with double-sided tape. The tape didn't provide an strong a bond as I'd hoped, so I secured the back of the sandpaper with 3M Super 77 adhesive.

To finish the building, I mounted .050" styrene rod into holes in the back and office (see step 3 above). The rod projects diagonal the back and office, which I reinforced with Plastruct Weldene. I used clamps to hold the rear sections together while the glue dried.

I then added a few details to the drum, including a propane tank and some gas cylinders. The latter looked a bit tall, so I removed ¼" from each cluster of cylinders with a razor saw. I painted the tank and cylinders using the same colors as the propane storage tank.

I couldn't find a model of a bulk propane delivery truck, but I wanted some kind of vehicle to set in front of the building. I used a Tonka static dump truck from Hasbro to represent a gas cylinder delivery vehicle.

I painted the truck to job to match the gas plant in color scheme and added some of the fittings cylinders in the engine bed. I'll add chemical placards (available from Plastic Model Products) and decals to the truck at a later date.

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Hospital Gates

Neil Ripley of **The East Riding Finescale Group** describes their new O gauge layout, based on the Whittingham Hospital Railway. Photography by **Tony Wright**

The East Riding Finescale Group was formed in 1988 by a group of friends who had been members of the Hull & District Model Railway Club. Most of the members had been modelling in 4mm scale and had been looking for a change. Some of the group had been members of the Hull & District Model Railway Club's O gauge section and had been modelling in that scale for a number of years. Others had been modelling in 7mm scale and had decided that they would like to try something different.

The group's original intention was to model a fictitious location in East Yorkshire, but after a while we decided that we would like to model a prototype location. Many of the group had been to Beamish Museum in County Durham and had enjoyed modelling the tramway there, so we decided that we would like to model a tramway. We looked at a number of locations, but in the end we decided that we would like to model Whittingham Hospital Railway in Lancashire.

Whittingham Hospital Railway was opened in 1903 to serve the hospital of the same name. The railway was built to standard gauge and was 1¼ miles long. It ran from a junction with the Preston to Longridge line at Grimsargh to the hospital. The railway was built to carry coal to the hospital, but it also carried passengers, goods and livestock. The railway was closed in 1964 and the track was lifted soon afterwards.

Whittingham Hospital Railway was chosen because it was a railway that could be operated by a small group of people. It had a small number of locomotives and rolling stock, and the track layout was relatively simple. The railway was also interesting because it had a number of different types of locomotive and rolling stock, including a steam locomotive, a diesel locomotive, a petrol locomotive, a horse-drawn carriage and a horse-drawn wagon.

The group's first task was to find a suitable location for the layout. We looked at a number of different locations, but in the end we decided that we would like to model the railway in the area around the hospital. We chose this location because it was relatively flat and because it would be relatively easy to model the railway in this area.

We then had to decide what scale we would model the railway in. We looked at a number of different scales, but in the end we decided that we would like to model the railway in O gauge. We chose this scale because it was relatively large and because it would be relatively easy to model the railway in this scale.

We then had to decide what type of railway we would model. We looked at a number of different types of railway, but in the end we decided that we would like to model a railway that was relatively simple. We chose this type of railway because it was relatively easy to model and because it would be relatively easy to operate.

We then had to decide what type of locomotive we would model. We looked at a number of different types of locomotive, but in the end we decided that we would like to model a locomotive that was relatively simple. We chose this type of locomotive because it was relatively easy to model and because it would be relatively easy to operate.

We then had to decide what type of rolling stock we would model. We looked at a number of different types of rolling stock, but in the end we decided that we would like to model rolling stock that was relatively simple. We chose this type of rolling stock because it was relatively easy to model and because it would be relatively easy to operate.

We then had to decide what type of scenery we would model. We looked at a number of different types of scenery, but in the end we decided that we would like to model scenery that was relatively simple. We chose this type of scenery because it was relatively easy to model and because it would be relatively easy to operate.

We then had to decide what type of buildings we would model. We looked at a number of different types of buildings, but in the end we decided that we would like to model buildings that were relatively simple. We chose this type of buildings because it was relatively easy to model and because it would be relatively easy to operate.

We then had to decide what type of figures we would model. We looked at a number of different types of figures, but in the end we decided that we would like to model figures that were relatively simple. We chose this type of figures because it was relatively easy to model and because it would be relatively easy to operate.

We then had to decide what type of vehicles we would model. We looked at a number of different types of vehicles, but in the end we decided that we would like to model vehicles that were relatively simple. We chose this type of vehicles because it was relatively easy to model and because it would be relatively easy to operate.

We then had to decide what type of animals we would model. We looked at a number of different types of animals, but in the end we decided that we would like to model animals that were relatively simple. We chose this type of animals because it was relatively easy to model and because it would be relatively easy to operate.

We then had to decide what type of trees we would model. We looked at a number of different types of trees, but in the end we decided that we would like to model trees that were relatively simple. We chose this type of trees because it was relatively easy to model and because it would be relatively easy to operate.

We then had to decide what type of bushes we would model. We looked at a number of different types of bushes, but in the end we decided that we would like to model bushes that were relatively simple. We chose this type of bushes because it was relatively easy to model and because it would be relatively easy to operate.

We then had to decide what type of grass we would model. We looked at a number of different types of grass, but in the end we decided that we would like to model grass that was relatively simple. We chose this type of grass because it was relatively easy to model and because it would be relatively easy to operate.

We then had to decide what type of ground we would model. We looked at a number of different types of ground, but in the end we decided that we would like to model ground that was relatively simple. We chose this type of ground because it was relatively easy to model and because it would be relatively easy to operate.

We then had to decide what type of water we would model. We looked at a number of different types of water, but in the end we decided that we would like to model water that was relatively simple. We chose this type of water because it was relatively easy to model and because it would be relatively easy to operate.

We then had to decide what type of sky we would model. We looked at a number of different types of sky, but in the end we decided that we would like to model sky that was relatively simple. We chose this type of sky because it was relatively easy to model and because it would be relatively easy to operate.

We then had to decide what type of lighting we would model. We looked at a number of different types of lighting, but in the end we decided that we would like to model lighting that was relatively simple. We chose this type of lighting because it was relatively easy to model and because it would be relatively easy to operate.

We then had to decide what type of sound we would model. We looked at a number of different types of sound, but in the end we decided that we would like to model sound that was relatively simple. We chose this type of sound because it was relatively easy to model and because it would be relatively easy to operate.

We then had to decide what type of smell we would model. We looked at a number of different types of smell, but in the end we decided that we would like to model smell that was relatively simple. We chose this type of smell because it was relatively easy to model and because it would be relatively easy to operate.

We then had to decide what type of taste we would model. We looked at a number of different types of taste, but in the end we decided that we would like to model taste that was relatively simple. We chose this type of taste because it was relatively easy to model and because it would be relatively easy to operate.

We then had to decide what type of touch we would model. We looked at a number of different types of touch, but in the end we decided that we would like to model touch that was relatively simple. We chose this type of touch because it was relatively easy to model and because it would be relatively easy to operate.

We then had to decide what type of smell we would model. We looked at a number of different types of smell, but in the end we decided that we would like to model smell that was relatively simple. We chose this type of smell because it was relatively easy to model and because it would be relatively easy to operate.

We then had to decide what type of taste we would model. We looked at a number of different types of taste, but in the end we decided that we would like to model taste that was relatively simple. We chose this type of taste because it was relatively easy to model and because it would be relatively easy to operate.

We then had to decide what type of touch we would model. We looked at a number of different types of touch, but in the end we decided that we would like to model touch that was relatively simple. We chose this type of touch because it was relatively easy to model and because it would be relatively easy to operate.

Die Anlage ist in drei Ebenen aufgebaut. Hier sieht man den Bereich der unteren Ebene, der durch einen Tunnel mit dem Schattenbahnhof verbunden ist.

Auf der Anlage sollen zwei Zugarten verkehren: Regionalzüge und Güterzüge. Für den Regionalverkehr wurden zwei Garnituren mit jeweils drei Wagen beschafft. Die Güterzüge sollen aus möglichst vielen unterschiedlichen Wagen bestehen. Dafür wurden bereits einige Wagen gekauft, weitere sollen folgen. Die Lokomotiven sollen ebenfalls möglichst unterschiedlich sein. Auch hier wurden bereits einige gekauft, weitere sollen folgen.

Die Anlage wird in Z, Fine Scale gebaut. Die Gleise werden mit Code 55 Schienen verlegt. Als Schwellenband kommt Tillig Elite zum Einsatz. Die Weichen sollen ebenfalls von Tillig stammen. Sie werden mit Motoren von Tillig ausgestattet. Die Steuerung der Weichen soll über Servos erfolgen. Diese werden von einem Arduino Nano gesteuert. Dieser wird über einen Rocrail-Server angesteuert. Die Steuerung der Züge soll über Rocrail erfolgen. Dazu werden die Lokomotiven mit Decodern ausgestattet. Diese werden über Rocrail programmiert. Die Kommunikation zwischen Rocrail und den Decodern soll über das Gleis erfolgen. Dazu wird ein Booster eingesetzt. Dieser wird über einen

Tech Files

Lead fillets from the Langton Hall Church window before the restoration work was started.

Fig. 1 Lead fillets being held, fractured and bent, in the window frame. Fig. 2 Lead fillets removed from the window frame and ready for the cleaning process.

The Initial Inspection and Page Work

Conservation

ON LOCATION

Hannes Hübner

141 R 1244

Anselm Schlosser went on board the railway enthusiasts' train run each June to celebrate the locomotive's birthday and to find out what makes the 141 R 1244 so special

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article and photographs by Patrick Farrell, NARP
photographs by Patrick Farrell, NARP, unless otherwise noted

This small building, a landmark in Lakeville, New York, on the road to [illegible], is [illegible] (see story) Lakeville's small industry for 80 years. Upon first [illegible] at the building, [illegible] and photographed it [illegible]. At that time the factory [illegible] closed and the building [illegible]. The siding was [illegible] by the new Livonia, [illegible] Lakeville Railroad. Lakeville, a major community located at the north end of Conesus Lake, presently serves as the railroad's main traffic and engine terminal.

Research found that the building had served many purposes and gone through many appearances. In fact we [illegible] a company whose [illegible] the neighboring farms, packaged them, and redelivered to customer food markets. Before that [illegible] the time I interviewed [illegible] the building was a feed company that had a platform on the west side that no [illegible] connection. When rail service was no [illegible]

Below: The [illegible] building is [illegible] of the photograph [illegible]. The small [illegible] right [illegible] [illegible].

Above: Access doors on each end of the building allow for easy loading and unloading of hay and for bedding removal. Additional doors on the sides provide access to the stalls. Ventilation is provided by the cupola and by the gable vents. Below: In 1999, the building's metal roof was replaced. The original cupola was removed, but the vents were retained. Left: The original cupola was replaced with a new one. Right: The original vents were retained.

gate provided, the platform was removed and cracks could be seen. In 1973, as today, the canopy that covered the platform remains, although it is worn and deteriorated.

Trackwork was replaced by a small shed on the east end, a rectangular addition enlarged from the original loading platform. Previously, a small stockyard had been enlarged to the 1973 specifications.

While I was not able to get inside, I have been told that the roof is replaced several times, but in 1999 the building was remodeled with construction material.

Since the numbering did not take place at C prior, the roof color has varied in appearance, as the roof's overhanging eaves provide color high up on the walls as underside canopy. The red paint still remains under the eaves additions have removed in recent years. The metal roof, while still intact, is moderately rusted.

Modeling the Building

The model can easily be built using commercially available board and battens siding and shingles for the cupola. I suggest basswood, especially if you intend to weather it. Paint both sides to minimize the possibility of warping. Attach siding with a very fine brush and glue for easy handling. A dull red color would be best.

Right: The canopy's roof is a simple structure with the metal roofing material laid over. The structure has numerous X supports.

Metal overhang material for the building, gutters, the cupola, and the canopy is available. Brass-Model Metal has a good color that should be fine for this purpose. Apply the coloring with powdered chalks. The inside additions look as paper reading. Paint the foundation a neutral concrete. Use Bragdon Aged Concrete color here. Next, it was time to glue on the concrete, plastic available used.

While not even a necessity. Tichy windows could be used as well. Tichy No. 8029 for the double hung windows and No. 8023 for the single sash. The hinged door number Tichy No. 8003.

Livonia, Avon & Lakeville Railroad

The present-day LA&L Railroad was incorporated in 1984 after the Livonia Conservancy proposed abandonment of its Livonia Lakeville spur. Passenger excursions were run from Livonia using steam power. Freight was mainly seasonal until

the Western New York Service & Supply Corp. opened a new plant in Lakeville and employed 1,500, as we know on the

At first, tractor passenger trains using a 2.8-2 motor engine. The 27 originated in Lawndale. A 5.8L 14-row diesel locomotive was used for freight; for 1969 the 2.4-3 was replaced with a 2.8-6). 1/4-10. The first of many times, in 85-1 because the maximum tractive power in 1972 "tractor operations would in 1973. Passenger was stopped in 1977.

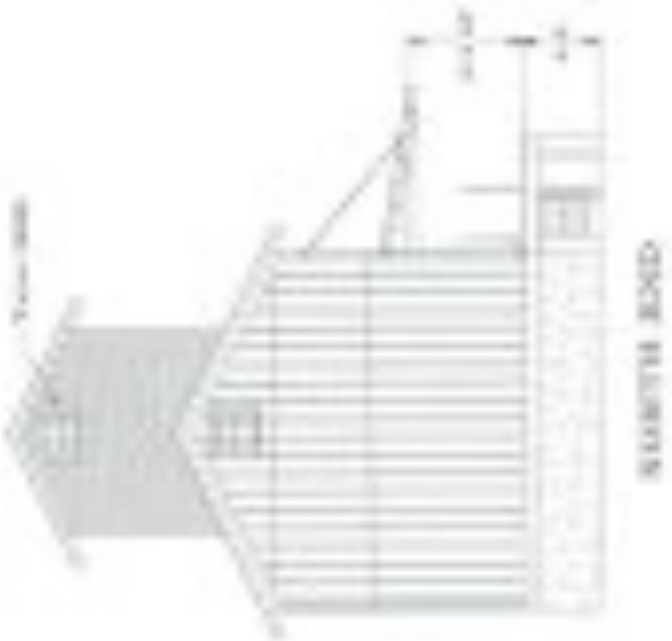
The summer of 1983 brought the opening of Interstate Electric's new plant in Lakeville and car loadings increased to many days 1,700 annually. The railroad has been operated by a G.E. Kimberly, Inc. has Harold Maitland, Cargill, and Perkins in Lakeville, and Florida tomatoes passengers having to leave.

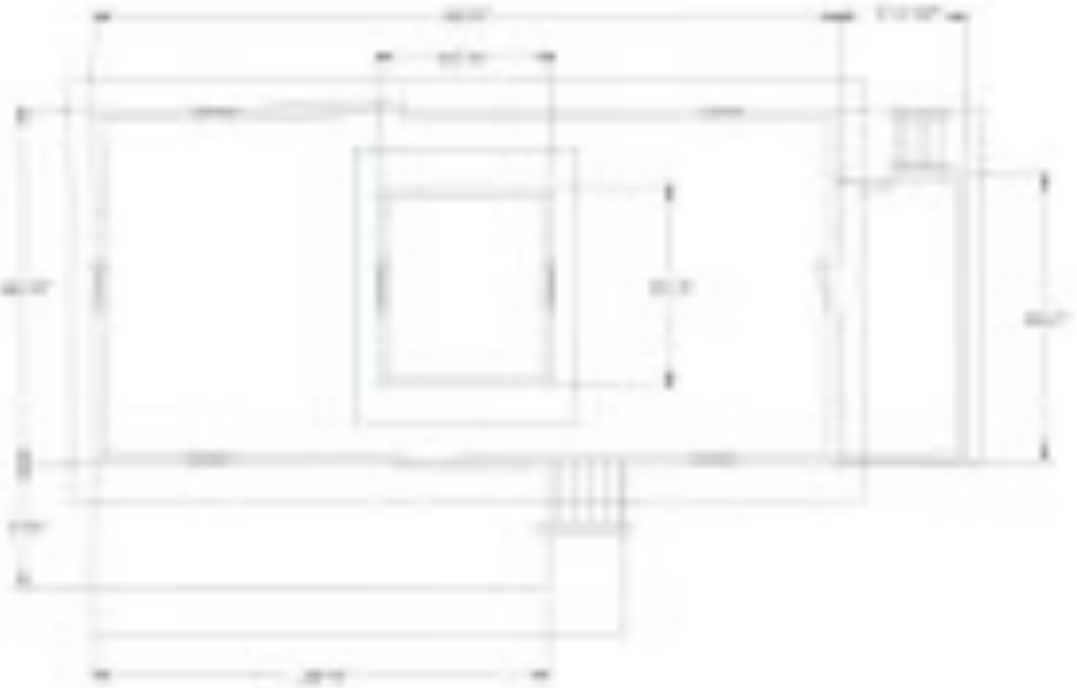
Today, it is not uncommon to see the railroad's commander. Also, power hauling two thousands of dry Lading hopper and grains or sugar, and cars and coal, corn-crop, soybeans and flour, machinery parts, cold, CCC or Gooseneck, Interstate world of Rochester.

Feed Companies

The following information comes from Raymond Bernard, who worked at a feed company in his youth.

"The feed companies owned and supplied most the various livestock on United Canada. Feed was packed in burlap bags, which were used once and were again. Chicken feed and hog feed was sold also. Because of grain was received, as well as grains from the farmers. Many farmers would bring in truck loads of corn, oats, and wheat to be mixed with other grains to the farmer's specifications. This was done while the farmer waited."





Metal Roofing, Typical corrugated, purlin and angle, R.S.

WEST SIDE

SOUTH SIDE

Assessment Innovation shows some of the techniques for highly detailed architectural scale modelling. Photographs by the author.

Cement – from foam

The first in a series on the use of foamboard as a micro-detailing material

[illegible]

[illegible]

[illegible]

Step 1

Step 2

Step 3

Step 4

Step 5

Step 6

Step 7

Step 8

Step 9

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

Skippic...

Richard Clark has set up a model...

"Sophie, instead of sketching
me, why don't you finish the work?"

Set Your Sights a Little Higher

article and photos by Dave Lowe (AM)

One quick look at the history of model railroads and you'll instantly notice one thing: As the eras progress it seems to get higher and higher. Today, having a layout "at a level of a [subjectively typical] man's chest height, shoulder height, or even taller isn't that uncommon.

But during that 40 or so years of the history of model railroads, you'll see that they basically stayed the same height.

And that's a problem for someone like me, who enjoys taking model photos as a "hobby within the hobby." Taking those shots have a large depth of field means we highlights & shops (smaller apertures) and longer exposure times. And that makes a tripod an absolute necessity.

So the problem becomes getting the camera up to layout height.

Over the years I've tried all kinds of apparatus to compensate. I propped the tripod up on an old milk crate for a while, until one of the tripod legs slipped into a hole and bent itself beyond use. I put on 2 heavier ones (which helped and eventually the camera to the bench). I even went to the [illegible] store and bought a tripod that would fit on the "point shelf" of a [illegible].

The problem with most of these "solutions" was that carrying the camera was a pain. Bending it up on its feet or shifting it into how to the left was a major ordeal that involved also [illegible] of the whole mess.

But a simple, workable solution presented itself one evening in the form of a 3 inch-long diameter PVC pipe I had left over from a [illegible] project. The bottom section of my tripod [illegible] so

The Log Unloading Platform, Steam Donkey, and Tool Shed

Upgrading a Steam-Power Log Unloading Platform

article and photographs by Richard Kreger

The unloading platform was built over the instructions in the Iron Mt/Iron Dyke Mills at Dyke Creek, Ark., except for the changes listed below. Rod cable was used instead of the wire rope specified, and was held in place with 3/8-in. rod to attach the boom to the platform. The brakes participated with the log was lowered and on the steam/block/donkey was used, the unloading platform was slightly enlarged (from as built), and a steel cable was used to secure the boom to the platform. Additionally, a rod pulley was used under the rod of the boom for the main cable. Kingpin pin assembled wood holders (mine is a wire's bar, wire used a cylinder-shaped to pass wood planks running) rods was substituted for the triangular wood (mine is rod provided by Gary Bell at Knotty and Kentucky was used instead of the wire casting provided.

The wood parts of the unloading platform and boom as received are fine but the fit's inconsistent. The metal parts were covered with a coarse substance of resin and, otherwise smooth, and ended rather. The platform was spray painted Hospital Green Black to my prior levels.

I would suggest the following improvements when building the Iron Mt/Iron Dyke log unloading platform: (1) use pneumatic tensioning operators (shown with as shown found in the boom to boom at Steam Donkey page 171); (2) fabricate clevises to tighten the brakes such as mentioned above; (3) design a cable support system attached to the boom that keeps the boom from falling onto the log ramp; and (4) use rod fabricated standard cable and not wire rope as shown. Working under the rod cable rather than rod cable.

See more of Dick Kreger's HO scale steam logging layouts at www.richkreger.com.

Steam Donkeys. Three original Dyke donkeys were disassembled, sandblasted, and painted. Each donkey is mounted right to a rod for boom guys. The donkey on the far right was used on the unloading platform. The other two will be used on the second platform. The donkeys are set to be reassembled.

The engine used as a guide for design was the Lima Locomotive Works' No. 8 Shay. Editorial

Middle Mountain

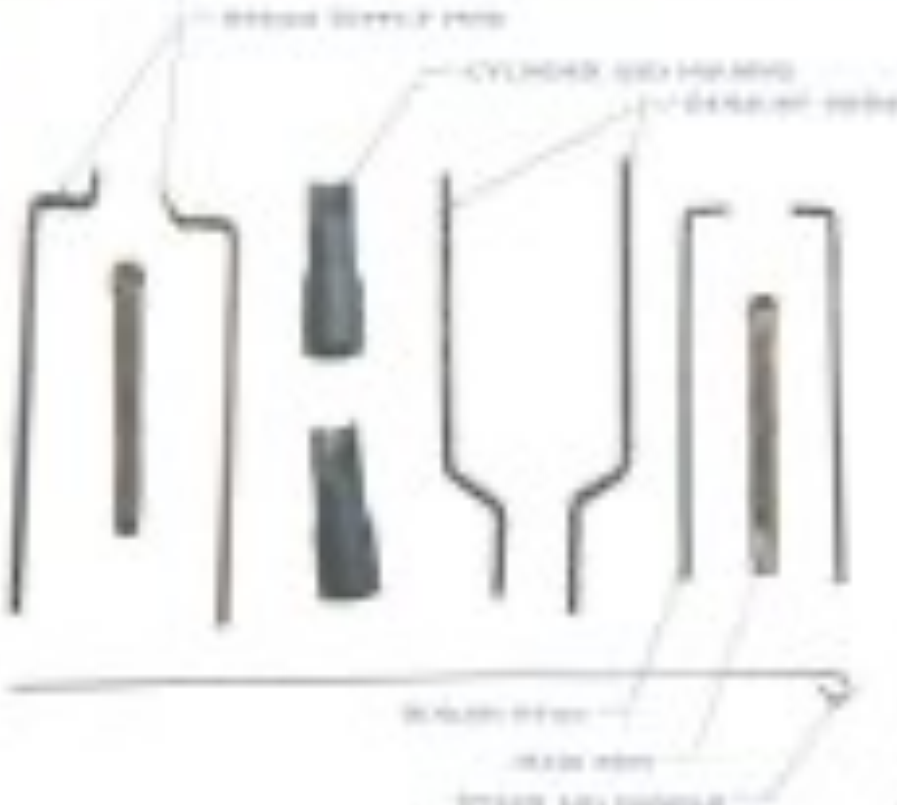
Upgraded Steam Donkey

Donkey Dolloloms: *An endless source of steam, gas, diesel, or electric power, plus drums to hold wire rope, all used to haul logs from the woods, to load a landing, carry equipment, rig up to move, and for the children, keep cats down on farm. Donkey was sometimes originally applied to a little steam engine, or has also come to mean power.*

Above: Shown is a steam donkey skid. The block planks are laid out and then sawed into shapes to improve traction.

Below: Here are the essentials parts to create one. Cut a steam donkey. The majority of parts are simply laid out of different pieces.

Above: The finished steaming product of steam donkey construction — an actual donkey. Cuts, packed load, with donkey, and finished engine.



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TIPS & TRICKS

Spring-loaded forward controls

Running a powered engine with an open power (or any other power supply control) can present a problem when using manual turnouts. You always have to nearly down and reposition the switch to safely guide the wheels, especially with screwing loops. A simple method of control is to keep the turnout in a fixed position with spring tension. The steel wire passes back through the mountain to the screwing attached lower the loop if with easy light pressure or bend against the point rails. I have used a device to both turn on Atlantic Coast state station numbers using Kato glass fixtures (#8) about and 12 square ratings), a 14" x 3/4" spring, and a #8 socket head screws, nuts and washers. The front end of the spring is slightly bended to adjust the tension if needed. Materials were inexpensive and a safe trick to running to customers. The wire could be installed on either side of the turnout and can be customized for any manufacturer's switch. — Bradley Gray, Campbell, California

Ballast box

Backscratching ballast is a common problem with garden railroads. At our Big Blue Railroad, we made a ballast box. First [—] sheets of plastic foam board like this. We added two pieces of half-sections to the sides and another horizontally for the floor because we wanted to be able to easily thread our top ballast. Our track guide are top open hinges allow the track to stay down safely tucked into the front upright. We painted and painted in woods and can and placed it against the fence near the yard gate. This box holds about two sheets of a color yard of ballast. — Bob Hoyt, Aurora, Nebraska, Colorado

Switch signs

I made my railroad signs with ¼" dowels or holes and embedded in the bottoms of their posts in order. Every time the ground. The signs was put well enough and they also found one useful instead of breaking off when changed. But the best thing about them is that they make good with the passing and little drivers and kings. We got bridged in MINOR places, like between switch panels or in a locomotive's plastic carriage. I have eight scattered around the railroad so that's a design one is much alternative a ring or snow you much — Bob Hoyt, Sun Kings Conference

Tangible tips

I got some staplers and have started working with it. Here are some things I learned about it:

• Make the staples in an upright orientation like a flyback bag. Acids and moisture in the air are enough to rust a wire class.

• Staple-remove staplers are good for holding pieces in place while soldering. I use the staplers with the black plastic covers for cord handles to keep the wire and have something for me and they hold better. — Gary Ross, Glenrose, Indiana

Send us your tips and tricks

E-mail your submissions to railroadtips@kalmbach.com. Put "Tips" in the "subject" field and include your mailing address. Keep your text brief—300 words or so. Send along any photos you'd like to see. Your submission guidelines, and more details: Railroad.com.

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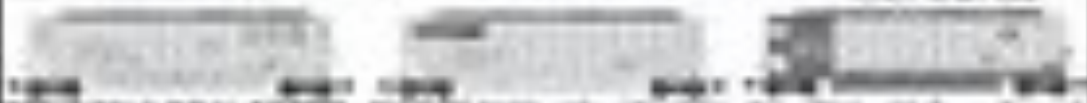

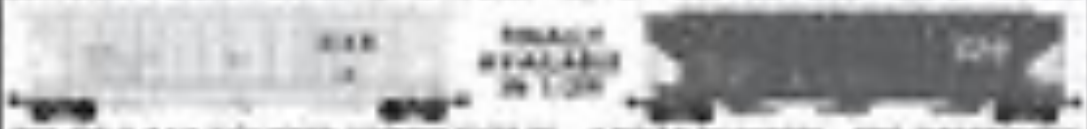

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A junction town

Part 1: An Austrian modeller makes his own slice of railroading in the United States

on four Ntrak modules

In addition to fast-paced action along the standard Ntrak oval, yellow, and blue main lines passing Waukesha Tower, Manfred's layout also includes a hidden staging yard and switching from tracks in a tunnel.

By Manfred Neuwauer • Photos by Helen Gee

Some model railroaders are content with constructing a layout based on a specific place or time they choose. But not me! I'm always looking for new challenges, building layouts based on standardized modular specifications so as not to limit where I can take them. The ability to develop a small, yet significant, part of an larger layout has kept me active in modular railroading for nearly 40 years – a great highlight for any railroad. A wide-ranging railroad that covers most United Ntrak modules.

The idea for my Ntrak ensemble I've named "Waukesha Junction" is an exciting N scale model railroad. As well as being a part of a small modular exhibition layout in my home country of Austria,

I've also designed the railroad to include an independent freight yard. In addition to switching opportunities, I wanted the modules to provide a variety for finding effective solutions to a variety of "Ntrak" problems and for schematic trains, passing tracks into the Ntrak and end-to-end trains, and a yard for the like. Add to that one area featuring a raised mainline and another area with multiple crossings that keep the dominant contrast sections in Waukesha, are in "Wyoming."

Although the layout has a modernized theme, my travels throughout the United States influenced my goal to assemble a detailed diorama featuring scenery, structures, packing any backdrops representative of the places I saw on the historic old "Main." After deciding what I wanted

Continued on page 37

4 Before assembling this intricate array of crisscrossing tracks at Woodlands Junction, Washburn first drafted the plan on paper and laid out the arrangement using positions to temporarily hold the code 98 fasteners in place.

The layout at a glance

Name: Woodlands Junction
Scale: N (1:160)
Size: 2' 2½" x 16' 9"
Theme: Fictionalized
Locale: Southern United States
Era: 1950s to contemporary
Style: Mixed modules
Mainline run: 14 feet
Minimum radius: 9"
Minimum turnout: No. 6
Maximum grade: 2 percent
Benchwork: open grid
Height: 40"
Roadbed: cork
Track: Code 80 fastened
Scenery: Foam board on wood cardboard with glue soaked paper
Backdrop: plywood
Control: cab control

5 A maintenance-of-way train makes its way near an Amish maple tree, while a local workhorse works along the wheat drainage Washburn added to maintain switching that doesn't interfere with other layout operations.

6 Washburn constructed his layout to include main lines of backwards. In this scene, the Amish main lines and the small station are on the higher tier, while the industrial lots and associated structures are located on the lower level.

7 Since on a modular layout packed tightly with track, Washburn found a way to include interesting industries, such as this NW Wheat coal dealer along the front of the lower level. In addition to the industries, you'll also find areas of rural scenery that represent locations in the midwestern and western United States that he's visited.

A Union Pacific container unit a century or two younger draws the streets at Waukesha Old Town to order razor businesses along the lower level industrial line.

Track running in a street is a feature that Manfred sporadically wanted to include in his Waukesha Junction layout. To build a basic paved roadway, he first applies a layer of cork to make the subroadbed and then saw the track. Next, he lines the edges of the road with wood strips and then covers the roadway and track with a layer of gray spackle. Manfred shares the spackle to use his own before using a broad knife blade to level the street.

Where the roadway intersects the track, Manfred uses a narrow screwdriver blade and hobby knife to carve into flangeways. He allows the spackle to set completely before painting the pavement gray. *(Left)*

Manfred distinguishes the concrete along the railroad right-of-way by painting it a different shade of gray.

continued from page 47

to the layout. It drafted a plan that included placing the three sawtooth and a wide array of scenery elements.

Module construction

My modules, which are frequently transported to and from various layout locations, are quite different from that of a stationary model railroad. While the substructure should be as light as possible, it must also be resistant to distortion or warping. I prefer open-frame construction that I celebrate with a lightweight service subassembly to give the overall assembly more stability. I generally use only ¼" or ½" plywood for wood, which is lightweight yet resistant to warping.

My open-frame structure is simple to build and requires no special carpentry skills. However, it's critical that the wood is cut to exact measurements. For added strength of construction, I purchase my frame materials at lumber suppliers or building supply stores that will cut them to my specifications.

Before doing any woodwork, I apply a generous coat of wood glue to all wood joints. I glue the framing members made from scrap pieces of wood into every corner of the frame. In addition to providing more stability to the frame, these braces also help keep the wood from warping. Finally, I coat the framework with a coat of clear varnish to prevent changes in humidity from affecting the wood.

Behind the scenes

Whatever reasons railroads have for permission for hidden staging, in a small, crowded space to the scenic action place to tell more of a story. For my layout, I wanted some hidden staging, so I worked on a design that worked with the layout's constraints.

To integrate the yard, I designed a rail backdrop with an enclosing scenic that makes it visually unbreakable for transport. Trains run safely and reliably through the hidden track thanks to multiple 4-meter track sections and a harness that prevents any inadvertent derailment from falling off the layout edge.

To keep the cars of the hidden area, I added a highway overpass at the entrance to the yard tracks. I built the bridge using various thicknesses of cardboard, ply wood, and scraps of wood. Dark-colored shades of gray paint help give the illusion of an authentic concrete appearance. On the opposing entrance to the yard, I used a wooden structure and vertical scenery elements to disguise the hidden staging

Underpass lighting

To reach key industries at the end of the lower-level industrial line, the Union Pacific switcher must first traverse the three Nitrak main lines via a railroad underpass. Before installing the Nitrak lines, Manifest added an light-emitting diodes along the underside of the girder bridge to help illuminate the way for vehicles passing through the underpass.

Instead of working with oversized station fixtures, Manifest used lamp holders from Bruce's street lights. To improve illumination, he applied silver paint inside the holders.

Rather than using miniature incandescent bulbs, which aren't very resistant to the rough handling modules tend to receive, Manifest installed micro LEDs.

Scenery insights

While no depot trackwork visible on a modular layout, it's meant to a specific compromise to model the right-of-way with great care. Although I didn't find it necessary to match the ballast to a color found at a particular railroad, I did want the ballast to resemble what I'd see at my Western United States.

For Peninsula Junction I used crushed, sharply fragmented ballast from a gravel supplier corresponding closely to Woodland Scenics' ref. #72 Lime Rock mixture. To apply ballast, I first pour the stone and then brush it into place with a paintbrush. Once everything is in position, I wet it just with a fine mist of 1 part glue to 1 part tap water, plus a drop of liquid dish soap, to cut the surface.

After securing the ballast and cleaning the rails, I also added weathering, albeit using the rights-of-way. For track I use an airbrush to apply Floquil Reef Brown blended with Railroad Tie Brown. I highlight ties with a light spray of Floquil Weathered Black or a rusty Rail paint. After applying this final finish, I use an abrasive rubber block to clean the railheads.

My Broward Woodside business is situated overlooked between the mountainous plateau and rugged western mountain terrains. As such, outcroppings stand out on the landscape, but would fully stop the trains from arriving.

To create these rock faces, I first apply a covering coat of latex wall primer. After allowing the paint to dry, I coat the landscape with Mineral white glue and apply a few buckets each of Woodland Scenics Hard or Earth ground cover. Where stones and rubble are appropriate, I also place them into the white glue before adding coarse vegetation.

For vegetation, I primarily use pale green ground foam materials from Woodland Scenics, Noch, and Faller. Although the color of commercial scenic material can vary widely between manufacturers, this variation helped me achieve more natural looking environment.

To the second installment of this two-part feature, I'll share additional insights on constructing the backdrop's cityscape, the hidden staging yard, and the layout's final lines connecting one of three stretched fiddle track lines to the single track across top of a chromatic peninsula.

Meet Manfred Nonnacker

Manfred is devoted enthusiast of Nitrak and an participant in numerous model railroad shows. His other interests include traveling, reading, cooking, and combat shooting. Manfred is employed as a communications engineer. He and his wife, Regina, and children, Daniela and Michael, live in Vanderberg, Austria.

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DAVID HILL MI was captivated by Gauge 3 following a change of perspective and is now the Parkside Railway Association. His layout occupies a sizeable part of his extensive garden.

Continued on the next

Settle & Carlisle Salute

Modelling this magnificent main line in a home environment

A Victorian crossing keeper's cabin

The cabin roof

[illegible]

Key cable routes, conduits

Pitching and assembly

Material Studies

Renders & Lighting

Final Look

An Norfolk Southern diesel pulls into Jim Richards' HO scale diesel shop, shi's original house were first place in our Freelancer Structure Kitbash Contest. In part 2 of this article, Jim covers the building's interior, painting, and final assembly.

Build a DIESEL SHOP

Part 2: Interior details, and finishing for a prize-winning model

By Jim Richards • Photos by the author

Fig. 1: Crane and supports. Since the traveling crane would make it difficult to work on the building's interior, Joe installed it last.

When I decided to model a large diesel servicing shed for Lincoln Emlins, the name did have some connection to the Hornby 0F0 scale Midlander EM. I turned to bitbashing. I started through the Mini- & Midlands range and their Midlands Timbering Electric Interior background building part Maxwell's original shown as the starting point for my construction. In part 1 of this article, in July's issue, I explained how I combined those parts and a few more to assemble my 'shed building's superstructure.

Now I turned my attention to the interior. In part 1, I used the high finish of Midlands overhead traveling crane kit to fabricate my own trusses. (Note: I'll explain here I smoothed the cross truss to hide the bolting. Both a work platform and maintenance detailed the interior, installed sky skirt panel roof panels and windows, and decorated the building.

Traveling crane

To further built up the interior walls, I cemented 1/4" square section columns onto the former to the windows, making them flush with the wall tops to provide supports for the roof trusses. I had already assembled the walls (unfortunately with 1/4" square brass rolling, so I cut these columns to spot the transverse supports. I drilled holes into the tops of the columns to receive alignment pins for a removable roof.

Next, I cemented dummy supports for the Midlands crossbeam to the columns. I added these supports on the assumption I would be at the work height as the walls (truss) considering adding. That way I didn't have to worry about the heavy rolling shelving via the finished model.

I trimmed the ends of two sets of crossbeam and cemented these together to fit the length of the shed's interior, but didn't cement them in place yet. The traveling beam from the Midlands beam-duct cross bit fabricate bolted to be modified to fit my interior work, so I cut the beam gradient alongside the vertical reinforcing rib and took out two sections (sections per girder). I then cemented the ends back together and cut these ends for later painting. **Figure 1** shows how the crane fits into the interior.

Work platform

As a last-a-minute, I found that a slab of 1/2" (thinnest) plus an 0F0F scrap sheet added up to a perfect height for the raised crossside work platform. I used two part epoxy to cement walls of 0F0F thinner onto the edges of the plywood, then cemented the top on. 0F0F scrap cut to reinforce the edges fit to a bit rather.

2011 Stevenage Kitbashing Contest

Thanks to everyone who entered our Trackside Structure Kitbashing Contest. **Joe Pruitt** took third place with his headquarters building, which appeared in our May issue. **Kazuo Yamazawa's** second place steel mill appeared in our June issue.

I laminated a pack of 0F0F scrap together to form steps, then cut the pack on a mitre saw to make half-and-mid-level steps to the platforms as seen in **Fig. 1**. I used a piece of wood to which push the stacked stairs through the saw blade. Also in **Fig. 1** are the steps that cross with the 4-metering Electric Motion pin. I cemented them with together and filled the gaps with gloss modelling paint to make the overall look more.

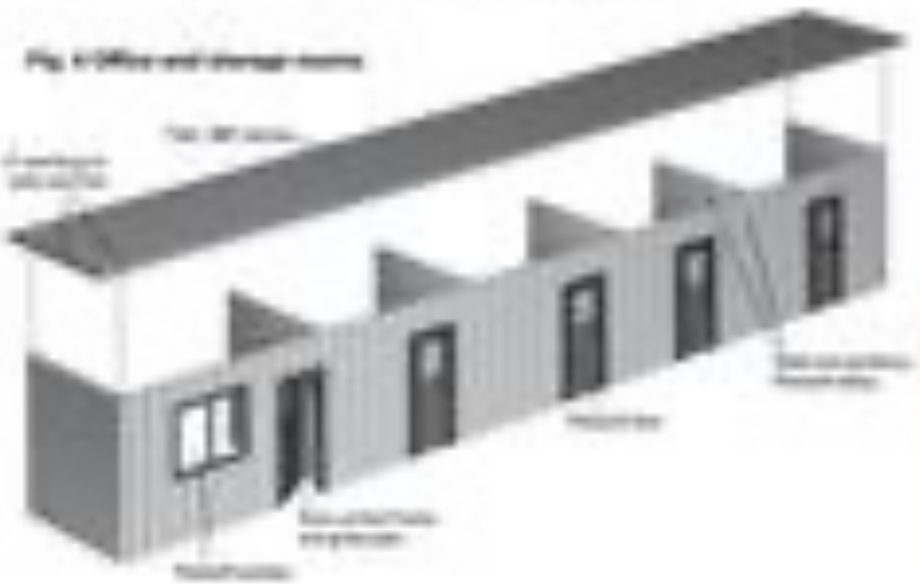
I added all the safety railings for the stairs and the platform ends from 0F0F strips with. The Artwearing kit includes plastic handrails for the common steps, but after testing them good for scratch built interior work-looked, I elected to make 0F0F handrails for the front steps, too. You can see the results in **Fig. 2**.

I cobbled together the office storage room assemblies from leftover Maxwell

Fig. 2 Bleached whites. Jim removed a shade of 'white' anyone in modern society, which he likes not to the width he needed on a table saw.

Fig. 3 Wire railings. Happier with his brass wire railings than the rounded ones in the Wickes kit, Jim soldered a set for the building's entrance.

Fig. 4 Office and storage rooms



requirement siding, doors and windows – followed the plans shown on **fig. 4**. Making sure each wall/element was to either side of the central panel lines, I cut two 4mm-wide holes from rectangles in 1 card/ position them, standing upright. The cards are 'dirty' anyway. I didn't glue any of this in place until after painting.

Filling and painting

I took the opportunity here (outside and lightly sprayed for a coat of grey auto primer. This brought out all the wood surface texture, which I rubbed with masking paste. After the paste dried, I sanded it smooth and then sprayed the parts with a second coat of primer. I sanded the primer coat lightly with 400 grit, then airbrushed the parts with two coats of Polly Scale Concrete and Gravel, high light at Figure 5 minutes. This resulting colour looked very scale to my eye, so I oversprayed the entire building with a dark-ish 50% coloured Grey.

I used double-sided tape to stick down the windows, doors, door trim, plastic handrails, and then varnish them all. Brushed them with Polly Scale Gloss Black. Once I sprayed all the sheet-wood wall panels (which I'd already glued in place) with a custom mixed colour overlay of British Colombia Dry Cement. When dry, I glazed the panels with a spray of Polly Scale Satin Finish.

The dark red for the roof is also a Polly Scale colour, and it also got a coat of Satin Finish after painting. I sprayed the under-roof Gloss Black, then after that dried, I masked it up so I could spray the sheet-metal gables and eaves green.

I airbrushed the drop flow and the roof platform with corrugated iron. It was one, then, and SP Lettering Grey. Then I weathered the concrete to the ground, forming an abstract mirror finish with the contents of a sponge. I put a few of paint over to a pool of water on a plate, so coffee can fall, so I could vary the dilution for shifting the sponge into new positions on the others.

When I was happy with the grungy finish, I sprayed it with Satin Finish. Gloss varnish and brush painted the whole cabin shape with diluted Rustins Yellow. I worked the recipes up a bit too, and then

Materials list

For a complete list of materials used in this project, please see part 1 of the article in the July 2011 issue of Model Railroader.

Fig. 6 Wall waxing. After painting the major components separately, Jim glued the corrugated Masonite panels into place in the Mothery scene.

Fig. 8 Overcoming a slope. Jim made signs like this maintenance schedule on his computer, already blank on a copied, and glued them to 3/8" styrene sheet.

Fig. 7 Stencils, stands. Signs, safety railings, and a workbench-like extinguisher add interest to Jim's service platform.

Final assembly and details

Here I could mostly install all those pre-cut and pre-painted sheet metal parts, as I'm doing in **Fig. 6**. After carefully mixing the window casings material, I began to clear the display cabinets. I reinstalled the scrollers in place where they once were (with the exception of those glued to the overhangs in place on the outside walls).

I made up the signs by typing them in Microsoft Word, then printing them. I traced some of the smaller signs on a copier, used spray adhesive to mount them on .060" styrene, and then cut them out with a hobby knife (about only on one other side of the cut) the scissors gave a smooth-cleaned edge. In addition to the large "Wholesale Plant Service" signs for the interior, I made a number of smaller signs, such as numbers for the benches, "Employee Check-In Here," and the like.

To decorate the office walls, I made business licenses and diplomas by printing them out page size with various calligraphic symbols (such as "Commercial Pacific Enterprises – BROKER"), then distressing them more on the copier. Even though they don't hobble a thing, they look pretty realistic. See **Fig. 8**.

While keeping watch about in a minimum, I did hang a few last pictures, screwdriver, knife and spray and "Still" brass rivet. I countersunk the office structure to the platform, added the handrails (also in **Fig. 7**), and glued the assembly to the base here. Finally I added a few fixtures and fabricated figures and glued on the travelling crane, then attached the roof. The finishing was now nearly complete.

Weather or not

The shed-shop is painted and assembled but has not fitted nets, and can on the free look. I almost hated to weather it, but there was no doubt it was not clean as I headed on a walk consisting of a few drops of Dullcoat to a small jar of Bleach water using natural bristles. I then used various brushes and cotton swabs to apply powdered pastels to the walls. I applied diluted spots of grey, green, white alcohol touching, and rinsed all smaller at last.

I finished the walls this black paint wash over the roof, then applied dark grey, white, and two colored powder strokes. (Note: the A.I.A. was definitely applied – Scrap & Safety Standard.) I then sprinkled the edge with a mixture of black and grey pastel powder to represent dust accumulations. I don't have any white pigeons, but I plan to add them.

While I was happy with all the weathering results, I found them to play with a light spray of pastel fixative (available at any art store), which, unlike clear paint removers, doesn't melt the pastel powder and cause it to disappear.

In a last step, I added clear window acetate glazing to the window openings and sign-graphic doors.

A successful kitbash

I'm really happy with the way the Hogwarfmore turned out. It was a big project – an extensively upgradable exercise in design, problem-solving, and

model construction. And it [illegible] I still have gained an excellent structure and a place to store all our locomotive-[illegible] operating accessories.

Jim Richards lives in Colorado with his wife, Anne. He has been modeling in HO scale for most of [illegible] currently he's building the Wholesale Kit, a [illegible] line on it in the Canadian Rockies.

Better turnout control
with slow-motion switch motors

Thomas Hunt uses toggle switches on a control panel to select routes in the yards at his layout. Follow along as he describes how to use slow-motion switch motors to wire a self-aligning yard ladder.

Part one:
Wiring yard ladders
for easy operation

By Thomas Hunt
Photos by the author

Tom says this test fixture is one the slow motion switch motors and make sure they function properly. He then installs the pre-wired motors under his layout.

Slow motion switch motors are a great way to add remote-controlled turnouts at a layout. Wiring a single turnout to a slow motion switch motor is fairly straightforward. However, efficiently wiring many complex turnout arrangements, such as yard ladders, wyes, double-slip and single crossovers, and slip transfers, can be more challenging.

My layout has about 70 turnouts and 20 of these arrangements. In this two-part series, I'll describe one effective, easy, and efficient way to operate multi-stage motor switch slow motion switch motors. Part one focuses on basic wiring strategies, power supply choices, and short cuts for slow motion switch installation — how to feed wire yard ladders. Although I've found these techniques can also apply to one motor switch motors with an extra set of contacts, I'll focus on two-only arrangements you'll find on readily available brass (Walthers) as well as motor-electronic component suppliers, such as (Tortoises) (www.alkelectronics.com).

Power supply options

The most important, but often overlooked, decision in choosing the best power supply for switch motors on your layout. Basically, you have two choices. One option is a single-stable, or conventional power supply illustrated in Fig. 1

Fig. 1 Unipolar wiring. A unipolar power supply requires two wires from each plow motion switch motor to a double pole double throw (DPDT) switch on a control panel.

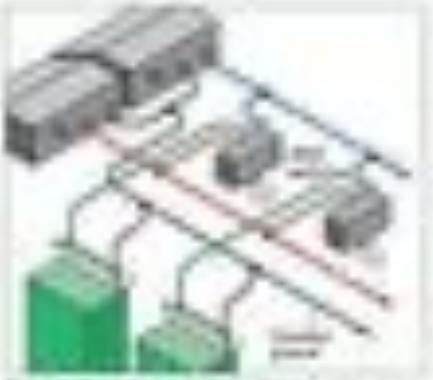


Fig. 2 Bipolar wiring. With a unipolar power supply, only one wire from each plow motion switch motor runs to a single pole double throw (SPDT) switch on a control panel.

Fig. 3 Simple yard ladder. The + and - signs indicate the polarity applied to pin 8 of the switch motors to align the turnouts for the selected track. Pin 11 is always connected to the common bus.

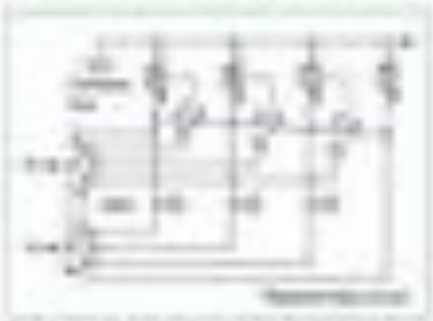


Fig. 4 Simple yard ladder circuit. The basic circuit for a simple yard ladder doesn't require diodes or resistors. However, you will need a twin-pole rotary switch.

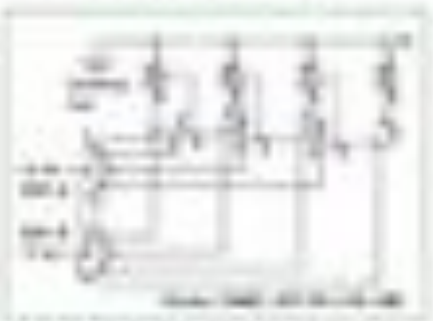


Fig. 5 Circuit with blocking diodes. Adding blocking diodes to the circuit is optional. The only advantage is the unnecessary point motion that can occur with the circuit in Fig. 4.

Fig. 6 Optimized relay circuit. A 12V SPDT relay (wired with the "i" in Fig. 4) can also avoid false motion. Turn attaches the relay to the side of a switch motor with double-sided tape.

The other options to a double-pulsed, or bipolar, power supply shown in **Fig. 2**. The disconnection alone from your switch motors would be connected using each type of power supply. At first glance, most modelers would probably opt for the unipolar supply, as it's apparently easier and less expensive. However, let's take a closer look.

A unipolar plow's supply requires one wire from each switch motor to the control panel, where a double pole double throw (DPDT) toggle switch has its two wires wired into the center bank. The bipolar power supply requires only one wire to the control panel and a single pole double throw (SPDT) toggle switch. The other wire is attached to a common bus wire that can be routed around the layout. Both types require that two wires from the power supply be run to a control panel, as shown in **Figs. 1** and **2**.

The bipolar supply becomes more attractive when the size of the layout, number of turnouts, and number of control panels increase. So when is the break-even point? Unfortunately, there is no single right answer as it's a cost vs. effort decision. I've come to conclusions using a bipolar power supply when the number of turnouts exceeds 12. Primarily this is because a bipolar supply has more wasted wire runners. Building one isn't difficult or expensive. (See "Building a bipolar power supply" on the next page.) ☐

Wiring yard ladders

Any yard configuration that uses the same switch motors can be controlled with a single return switch. Turning the overall or the desired track number will align all turnouts to that track, which makes operations a lot easier. Track crossing can be used with the return switch to optimize the accessory logic, but there are more efficient methods.

The article "Easy yard ladder control" by Elmer Tarnay appeared in the May 1999 *Model Railroader*. Tarnay used an astable multivibrator circuit that sensed the current used by the switch motors to control the direction of the turnouts. Although this circuit is simple and inexpensive, it has a few drawbacks. First, it requires a separate power supply for the multivibrator. Second, it requires a momentary switch to change the direction of the turnouts. Third, it requires a separate switch to select the turnout to be changed.

The circuit in Tarnay's article used a unipolar power supply. I modified the circuit so that it would work with a bipolar power supply.

Simple yard ladder

Figure 3 shows the most basic yard configuration—a simple ladder. The plow wire (+) and supply (-) signs indicate how the turnout plates will be aligned when voltage of the polarity is applied to the switch motor. As the + wire (pin 8 of the switch motor) is connected to the common bus and pin 8 is the one switched to positive or negative voltage, so the common track on the layout is arranged to a common gauge. It doesn't matter which one you call pin 1 that a turn marker when you are running it and not following the pin numbers on the schematic. Later on, it'll show you an easy way to determine which side becomes pin 1.

Figure 4 shows the minimal required wiring for a simple ladder. No

Building a bipolar power supply

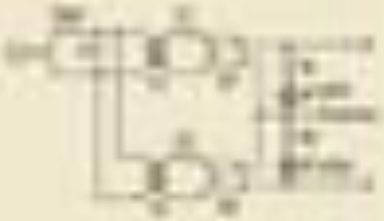
For a bipolar power supply kit that's capable of two identical power supplies with enough current capacity to handle the number of switch motors we plan to install, if you have a couple of DC power packs, all you have to do is connect the DC outputs in series, as in **Fig. 2** on page 53. If the DC voltages are adjustable, balance both notes using a voltmeter and ensure that they are not exceed 12 VDC. Don't use a dual power pack. Although a dual pack has two DC outputs, it may have an internal common connection, and a short circuit will result.

It's also easy to build a bipolar power supply from surplus following the unregulated power supply circuit shown above. Using this specified parts, you can build a power supply that will drive 30 switch motors for under $25.

For the line plug I use an ordinary extension cord with the female end cut off. The cord plugs into a protected power strip that's also connected to my other power supplies, so I don't need a switch (SW-1 on the diagram). The indicator lights (I1) and line light emitting diodes (LED1) are also optional.

The fuses I use are either Littelfuse Nonoperating (Leadless) (PTC) devices, or 2-amp glass fuses with holders. The PTC's look like small disk capacitors but are actually circuit breakers that reset after a short circuit is removed. Model MiniRite Corp. uses these devices in its Tech II series of DC throttles. I place a couple PTCs in parallel in each leg to protect the power supply.

Be sure to cover any 110 AC connections for safety, or put the entire circuit in a sealed enclosure. To conveniently connect the output leads, I purchased a Square D Equipment Grounding Bar (no. PK3GDTA) at The Home Depot. It's the same type of bus bar that goes into your home electrical panel. It's about eight inches long and it has three posts. — Erik



Materials list

All Electronics
(www.allelectronics.com):
FWB-46 bridge rectifier, 3
RMS-120V, 120V indicator light
RHD-090 PTC circuit breaker
.01- 1.5-amps, 3
1N-4002 1000-V, 1-A rectifiers
(2 amps,)

Miscellaneous:
12VDC single-pole single-throw mini-relay
SPST switch
Wire (assorted, 14- to 18-gauge)
Green LED, 2

Fig. 7 Component builder. This is a diagram of the card chassis in Gilbert Tanzey's May 2000 article.

Fig. 8 Component builder circuit. Here modified the component builder circuit from the Tanzey article to work with a bipolar power supply.

diodes or resistors are required. You will need a two-deck rotary switch—one deck is for positive polarity, while the other is for negative polarity. This circuit can be controlled so far as necessary by operating the switches (or relays if used) and reading with the pattern for routes (1).

This circuit has one liability. As you move the rotary switch through various track positions, notes of the hydraulic will go back and forth once, before settling in the proper position. This is because the contact on the switch when about to exit or come to any other position, momentarily disconnects the power from the track. Running this class the way relays down the line is connected to the opposite polarity. This doesn't damage anything, but it can be annoying or cause some signaling problems for automobiles.

There are a couple of simple ways for this problem. The easiest solution is shown in **Fig. 8**. Blocking diodes are placed to cross each the output on each rotary contact. The blocks the undesired polarity and the contact has had time to move on to other positions. I use 1N4001 diodes which are rated at a current rating of 1 amp, which is more than adequate.

The other solution is a bit more complex. It's the only commercial of the power controls that causes the problem, we can bypass the control with the use of a relay. The relay will energize as the rotary (see the rotary control is engaged), eliminating the problem. This solution also frees up the position contacts on the switch.

Any small 12V SPST relay can be used, and I simply attached the relay to the rotary with double-sided tape. The optional relay hook is shown in **Fig. 9**, and the relay coil wiring is in **Fig. 8**. The switches shown and disconnect the power from the track when the switch is moved. This relay is energized.

The card diagram in Tanzey's article contained lots in **Fig. 7** 4PB protection, added in an example of a completed card. **Figure 8** shows one way to wire the builder using a bipolar power supply. I've included the blocking diodes which are to suppress the undesired reverse. The optional relay can also be used here.

How the circuit works

The circuits work by using one of the contacts on the switch motor to perform the logic. For this example, there is a diodes in track routing. In **Fig. 1**, the rotary switch is shown in position 1. The applies positive voltage to route 1 and are in to track 1 route as **Fig. 3**. The contact on switch A also shown in the position shown will apply positive voltage to route A. The same applies shown in all other routes in the table, showing there are route 1.

When the switch is placed for position 2, negative voltage is applied to route 1 and routes it to track 1. This also moves the contact on A to pos. 2 and it route positive polarity to the other numbers across the top. (a position 1)

negative voltage is applied to control 'B' only via the 'B+' contact still keeping positive voltage applied to the rest of the circuit. Does that make it to an 'and' gate? Or, as this is a logical 'don't care' condition, this action continues down the line. In the last position 4-4 only necessary to align the final motor at the end of the sector.

Advanced part configurations

The two sort-type I have covered here are the most common designs. There are many other part configurations, including double-ended parts, that may appear to be different. If you think about it, all other designs can be broken up into various characteristics of some part(s) located or parallel. Work from, any part design can be controlled using the techniques presented here.

What isn't as obvious is how to design the circuit. I've presented only the results of the design. The design procedure itself is a bit more complex and beyond the scope of this article. For those interested, I have prepared a downloadable file that shows some actual variations and applications. See the ModelRailroader.com reference box on this page. —Ed.

These circuits aren't complex. As in most logic circuits, the more functions we try to implement in as many different ways. The Millennium we return the contacts are placed and how many diodes are required. The real trick is to find the most cost-configuration.

Wiring the circuits

First, you have to figure out which coil of the Tortoise wiring connected to pin 1. I grab a 9-volt battery and a couple of clip wire jumper leads to do this. After briefly zap the battery to the correct pins on the motor. Using **fig. 3** or **fig. 5** as appropriate, put in the switch angle the points on the points direction as indicated. If not, swap the battery leads. The pin connected to the negative side of the battery was should be labeled pin 1. Do this for each motor.

This coil information must starting point if you make a copy of the schematic. As each wire is identified, mark it off on the schematic. Now wiring the points of pin 1 together, and then ground with the other wires.

I had several card leaders to pins, so I built a simple fixture to help, shown on page 18. This allows you to wire and test everything on the bench before final installation. It's important to keep the switch motors on the fixture so the correct orientation required for the parts also used. I carefully removed the wire lengths needed and kept the wiring neat with plenty for wraps. I then installed the switch motors under my layout.

For our new widening part will give you of these products a try. With a little patience and planning you'll be able to make a new through or left aligning switches as ones found. That's exactly it's about. Use first I say done science result product to control many movements and slip switches. KR

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You can download a copy of Thomas Hyatt's "Design procedure for solid-state control" on our website. You'll find the link in the Online Extra box on our home page.

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[illegible]

The Llanmynach & Tawel-Llety Railway

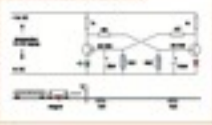
Inspired by many sources, including the Talyllyn, in 009

Alder Carr

Researching and building a mine railway in 7/8

Automating signals

How to add signals that change aspect when passed by a train



A modern breakdown crane in 4mm

Building the TTT Cranes Cheddon design, introduced in 2017

TTT CRANES Accurate and fully detailed, this model of the Cheddon hydraulic breakdown crane makes first collection by Bristol Top Shed enthusiast Kevin Lindsay and engineer Jeremy Hillman a proud moment.

Modern breakdown cranes are a fascinating subject for modellers, with their complex hydraulic systems and large number of detailed components. Many modellers are tempted to make one, but usually abandon the project when they realise how much work is involved. Kevin Lindsay and Jeremy Hillman, both members of Bristol Top Shed, have built a number of cranes for the Great Western Railway (GWR) and its successors, and have now produced a kit of parts for the Cheddon crane, which was introduced by Cranes Ltd in 2017. Kevin and Jeremy have also built a number of cranes for the Bristol Harbour Railway, and have made a detailed study of the cranes that operated in the docks. Kevin has also built a number of cranes for the Severn Valley Railway, and has made a detailed study of the cranes that operated in the Cheltenham area. Kevin and Jeremy have also built a number of cranes for the Great Western Railway, and have made a detailed study of the cranes that operated in the Cheltenham area.

A track plan for two eras

This Wabash branch changed a lot between steam and diesel years

By Dan Lawecki

Cummins's school-bus engine plant, which opened in 1965, is the most prominent structure on the north side of the Wabash main line in South Bend. The Studebaker plant is in the distance, and the Bendix plant is to the left of the Cummins facility. JIM HOLT

The two New Jersey, Indiana & Illinois (NJI, based in its hometown Crown Point, was a short line that's long on switching potential. It has six 12-mile main-line trackage rights between Gary and Illiana, the NJIRY was small enough to be replaced by a cross-yard space without losing its flavor.

Originally built to serve coal producers, the railroad now runs almost equal shortline traffic (cars that originate or terminate on NJI lines) and overhead cars. The operations of the NJIRY in 1977 were no different than those in 1929 that switching the road to each of those cars was required a different track plan.

A capsule history

In 1903, Jeremy and Peter Kellim began leasing a couple of 4- operate a new railroad in South Bend, Ind., adjacent to the south end of the Lake Shore & Michigan Southern Railway (LSM/NS). But before long, began to cross streetcar and the service and prices offered by the railroads. While not backing to the Wabash RR, began declared to build its own railroad.

Construction of the line once built finally in the junction with the Wabash at Hobart, Ind., started in 1904, and opera- commenced on Aug. 1, 1905. The name of the railroad is believed to refer not to any physical connection for the railroad, but for the place Angel had taken place: Elizabeth, New Jersey; Amold Illinois; and Crown Illinois.

This 1968 aerial view of South Bend, Ind., shows the Allied Products automotive parts stamping plant, occupying part of the former Studebaker auto factory. The ex-New Jersey, Indiana & Illinois yard, now owned by the Norfolk Southern, is in the foreground. PHOTO COURTESY HISTORICAL

The Wabash, previously just the NJIRY's operational partner, bought the short line outright in 1926. On Jan. 1, 1982, the Norfolk & Western (N) acquired ownership of all capital stock of the NJIRY. The railroad continued to be managed locally in South Bend until the NJIRY was folded into the Northern Portfolio locations in 1991.

Rail customers

For the first 10 years of operation, longer was the primary customer for the NJIRY. The South Bend plant assembled coach cabins but longer serving the streets. Inbound traffic included hard wood lumber, used for the plant's machinery, and supplies. The railcars were the primary outbound traffic.

The NJIRY also served a number of smaller customers along its line, including a coal dealer, a businessman, a garage, a hot shift, a grand jail, and a Purina Ralston Corporation grain elevator. The elevator was home to plant wide- switch. Amid via the NJIRY.

The first passengers carried by the NJIRY initially rode in the caboose. In 1906, the railroad bought a combine from the Wabash to handle passengers. cafe, and live stock—almost for U.S. depression. More passenger trains on the road was lavish, though we encounter a passenger would transfer to the Wabash. Passenger service ended in 1931.

The line gained another major con- mission in 1915, when the NJIRY con- structed Olive Yard to serve the new Studebaker automobile plant in South Bend. Within the same year, the Morris Coal started to ship its product on the railroad. Music produced a no- old aggregate employment Westbound along eastern terminal a monthly truck. Other customers to come on line later included a building products wholesaler, a fuel- heating plant, a cardboard box factory, a brass appliance manufacturer, and a company that assembled corru- gated pipe on rivet- and- column.

Wages closed the Great Bend Railroad in 1955 and sold even here. Established second to automobile manufacturing in Canada before closing for good. As waterbody you're managing operations lean re- capacity you at the complex and focused a colorable contractor the the NJIRY.

By 1975, most of the industries along the north end of the NJIRY from gone. Allied Products, Mishi- and Ford Warehouse had become the railroad's primary customers.

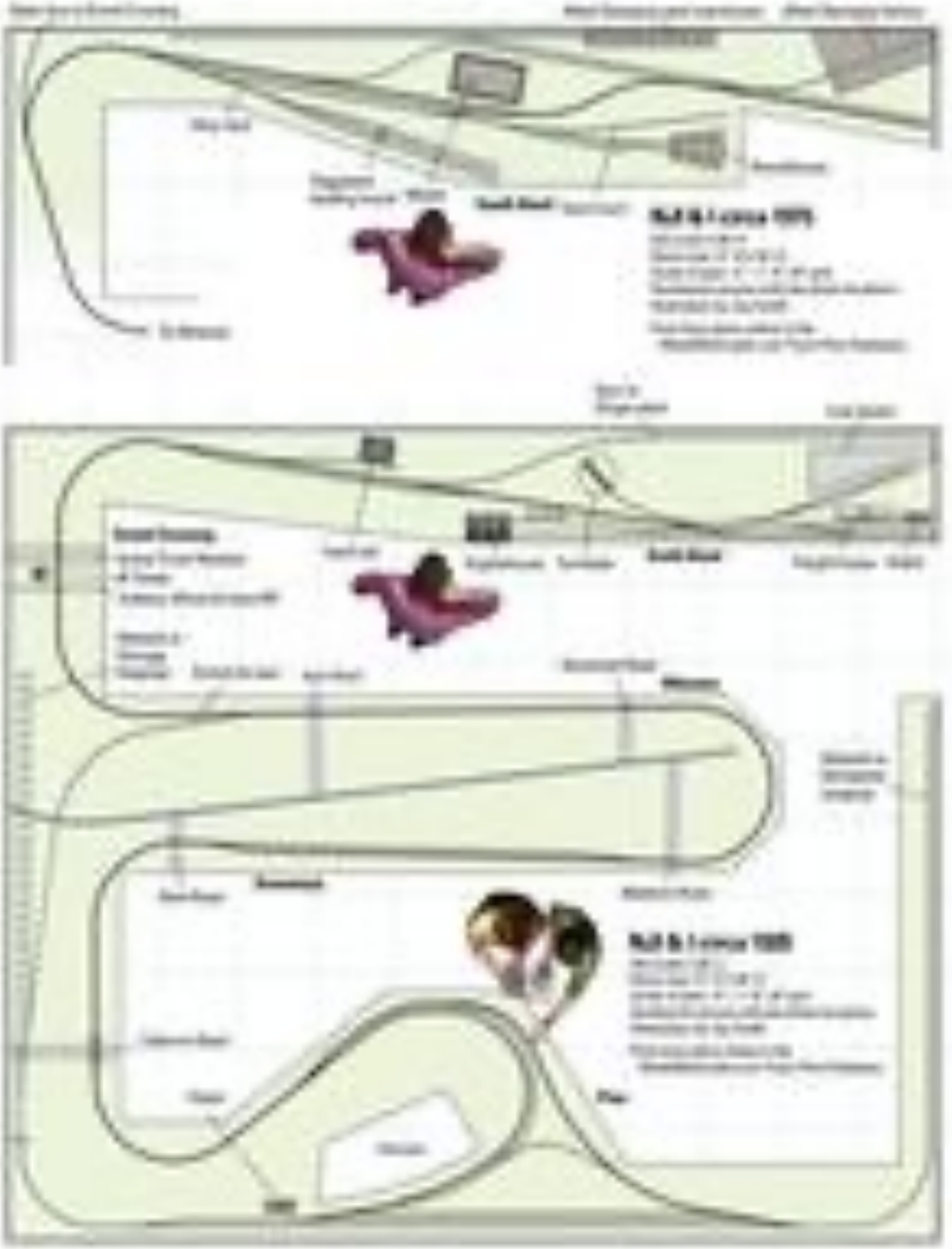
For several years in the 1970s the NJIRY also hauled solid wastes of brass shipments for the U.S. military and the Postal Service. The collective waste stream, by now, at the Kirtland plant consist- sisted of two trucked in Olive Yard, and hauled their collection tanks.

Modeling the NJIRY

The most noticeable of the NJIRY are well suited to those interested in model- ing a short line. The compact size of the railroad, the limited number trains run- and the variety of traffic carried by the line all offer a lot of potential.

The operation feature of the NJIRY was the model train at Peru. A single- train is already a space- saving layout fea- ture, but a train needs a train can be huge! The track plan is a reasonable fac- simile of the prototype, except for the northern ends of the trains.

The NJIRY more- important modify of straight surgeons on the track plan from Stevens. Curves are introduced only as necessary to route the track plan within an overall space of reasonable dimen- sions. With 24" minimum radius curves on a harness, and 5 foot wide, the track plan measures 17 x 14 feet.



The two track plans present a choice of two eras. The 1959 track plan faithfully reproduces the track arrangements at the depot and freight station at the north end of the line. Traffic to and from the off-layout freight yard is handled by the Long Island Rail Road. The engineer between South Bend and Locust Crossing, however, is a continuous operation, one of the prototype's cycle engagements.

Although this track plan could be constructed all on one level, the owner would want to include the grades found on the prototype, with Swanson being the highest point on the line. The diesel-era steam engines used by the NS&R required more room traversing from Point to "double the fun" as locomotive, where a 4-6-6-4 that powering rolling load there can proceed when the line was built. Building this operation would add an authority to diesel to operations. Passenger and freight trains can also count as locomotives as they did on the prototype.

By 1973, when the road was named by the NS&R, virtually all of the NS&R's timetable and train plans were all routed Crossing. Therefore, the north end of the 1973 track plan represents a completely different part of the railroad. The 1973 South Bend track is the plan to a greatly condensed version of the prototype, which consisted mainly of the modern side to serve Alfred Krumping.

In the 1973 plan, the Steele plant is paralleled by a considerable amount that

The track plans at a glance

Names: Peter Horsley, Holbeck & Moorby Hill
Scale: 4mm (1:76.2)
Sizes: 24 x 24 feet
Prototype: Suffolk Wherryman schoolboy from 1959 to 1966; Norfolk & Western branch line, mixed traffic
Locale: South-West, Ind
Era: 1959 or 1970
Style: suite to
Mainline run: 60 feet
Minimum radius: 24 inches
Minimum turnout: no. 7
Maximum grade: none

Locomotives and cars for the NJI&I

Electro-Motive Division NW2 switcher no. 2, seen here outside the Scenic Rapid roundhouse in 1962, was the primary motive power for the NJI&I through most of the diesel era. Louis A. Marre collection

Selecting motive power to exactly match the early versions of the NJI&I will be a challenge for my N scale modelers. There are few 4-4-0 or 2-6-0 steam engines on the market that resemble those used on the prototype. Perhaps a brass import might come later.

Modeling the later years will be easier. Kato has produced an N scale RS3 that's a good match for NJI&I no. 2. A modeler could also use a Norfolk & Western 1200 under the assumption that the locomotive is on loan from the parent railroad while NJI&I no. 2 is out for service.

Motive power offerings are more abundant in HO scale, although, again, matching the early diesel roster may not be easy. Broadway Limited Imports HO scale NW2 with its sharp as no. 2 for those interested in the 1970 plan.

Wood sheathed boxcars have been available in both N and HO scale for modelers interested in the early years of the NJI&I, though other cars might have to be scratchbuilt. A wider variety of rolling stock is available to both scales for those interested in modeling the 1970 version, though locating appropriate auto racks might be a challenge in itself. – *Ed.*

...month's concept as we are spinning. One spinning would be applied successively to other track and various turnouts that will close to the building.

Although these track plans are drawn for 4'6" x 4'6", the open heights, in 60-foot (the lengths of trains). That would be one with the shorter trains typical of the early era, but for the 1970 versions, the model would more realistically represent the prototype of a post train in N scale. Doubling up to a set outlined in the seven plans calculated for an HO railroad will improve the ratio of real estate to track.

Of course, if a longer span is available for the layout, the 4'6" modules will still work fine. The basic track plan can be easily adapted to lengthen the main line. The yard tracks, mountains, and passing sidings could likewise be lengthened for greater realism.

The track plans include a hidden staging section between the grand jet span and staging. This construction promotes the continuous operations, which is useful for those on modeling of real-world power as well as for "recreating the human" like lonely and trained.

Operations

The main purpose of the NJI&I—other good potential for prototypical operations. A typical day would begin with the crew arriving the locomotive or transfer depot. After filling the tanks with coal and water, the crew would walk the cold locos and begin their assigned duties. Switching up the outbound trains.

Prior to the operating session, boxcars and cars loaded would have been spotted on the larger spur or classified into their assigned track and location from the plans. The train the Pine would then depart locally first, perhaps passing locally to an on an empty boxcar at the first call at a grandma at the gravel pit.

After a trip to the switches at Pine, the Wabash cars on and for an run to the track, and the south bound cars picked up. The caboose would then be coupled on, and the entire empire turned on, for now. The trip home could then begin.

The NJI&I's track plans offer a lot more operational variety. Rolling stock could be staged in Olive Yard prior to an operating session. Car kind cards of boxcars would be to pull the cars into Wesley, adjacent to Olive Yard. Wesley was to the cars surrounding a coal siding, products, and inbound loads included boxcars of both cars materials as well as covered hoppers of PVC pellets. Outgoing boxcars of vinyl siding would be brought back to Olive Yard. Cars for Allied Stamping would be pulled and delivered every other day to the main and return to Olive Yard at the boxcars loaded while others addressed were sent. The crew would then assemble the outbound train for Pine. If there are loads or cars to be dropped, the loaded cars would be added to the rear of the train.

After the train has returned from Pine, Red Warehouse and the Grand Crossing interchange can be switched. On the passenger, this task takes on Dunellon and Shoreham, between the trains stops a week trip to Pine.

Long on possibilities

With more and more [illegible] a regional maintenance branch line. At last the NJI&I [illegible] railroad operations. A more [illegible] up for run operations. The rail road's ability to abandon as traffic have enabled it to prosper for twice their 75 years. Only thereafter can large operations be more rare remains of the NJI&I seen [illegible] for lesser or a time.

Pete Lyenski is a lifelong resident of South Bend, Ind., where he lives with his wife, Linda. They have six grown children and ten grandchildren. He doesn't have a layout yet, but is planning to model the Grand Trunk Western.

Killagan

A wayside spot in Northern Ireland, inundated in Arctic cold

Colin R. Mendoza Executive Vice-Vice Agent, based on a closed station around 40 miles from Belfast, came about as a result of a storm in 2012 on the Ulster Folk & Transport Museum.

Rockingham relocated

A new home for this traditional Pit layout

[illegible] describes the intentions of the layout Rockingham (2014) and Pitt Mason (2017) and a new model in order to give it a permanent home in the loft.

[illegible] the history of a model railway can be a complex one. Layouts are built, exhibited, sold, broken up and rebuilt, sometimes many times over. Rockingham is no exception. Originally built in 2014 by Pitt Mason, it was exhibited at a number of shows before being sold to Mr [illegible] in 2017. Mr [illegible] then exhibited the layout at a number of shows before deciding that it was time to build a new home for it.

Mr [illegible] had a number of requirements for the new layout. He wanted it to be more compact than the original, so that it could be stored in a loft space when not in use. He also wanted it to be more reliable and easier to operate. The original layout had been built using a number of different control systems, and Mr [illegible] wanted to simplify this by using a single system.

The new layout is built on a single baseboard measuring 6ft by 2ft. It is built using a combination of flat and curved track, with a minimum radius of 2ft. The track is laid on cork underlay and is ballasted with fine grey stone. The scenery is a mixture of grass, trees and buildings, with a few figures and vehicles added for interest.

The layout is controlled by a single DCC system, with all of the locomotives fitted with decoders. The system is operated using a handheld throttle, which allows the operator to move around the layout while controlling the trains. There are also a number of fixed control panels for operating the points and signals.

The new layout has been very well received by visitors to the shows it has been exhibited at. Many people have commented on how much more reliable it is than the original layout, and how much easier it is to operate. Mr [illegible] is very pleased with the new layout and is looking forward to exhibiting it at a number of shows in the future.

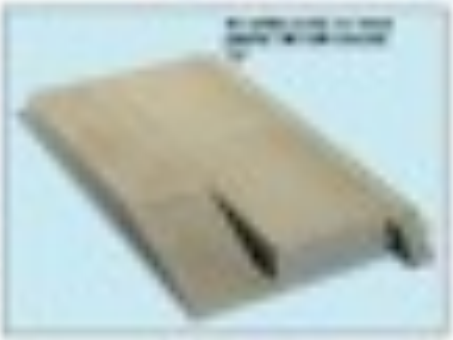
Glen Roy

Through the railway scenic door

Railway Modelling Explored

Goods siding detail in 00

Built using lineside kits from Peco products



Oh what a lovely pair...

...of knitted wagons. **[illegible]** recounts a cold-war movie shoot.

[illegible]

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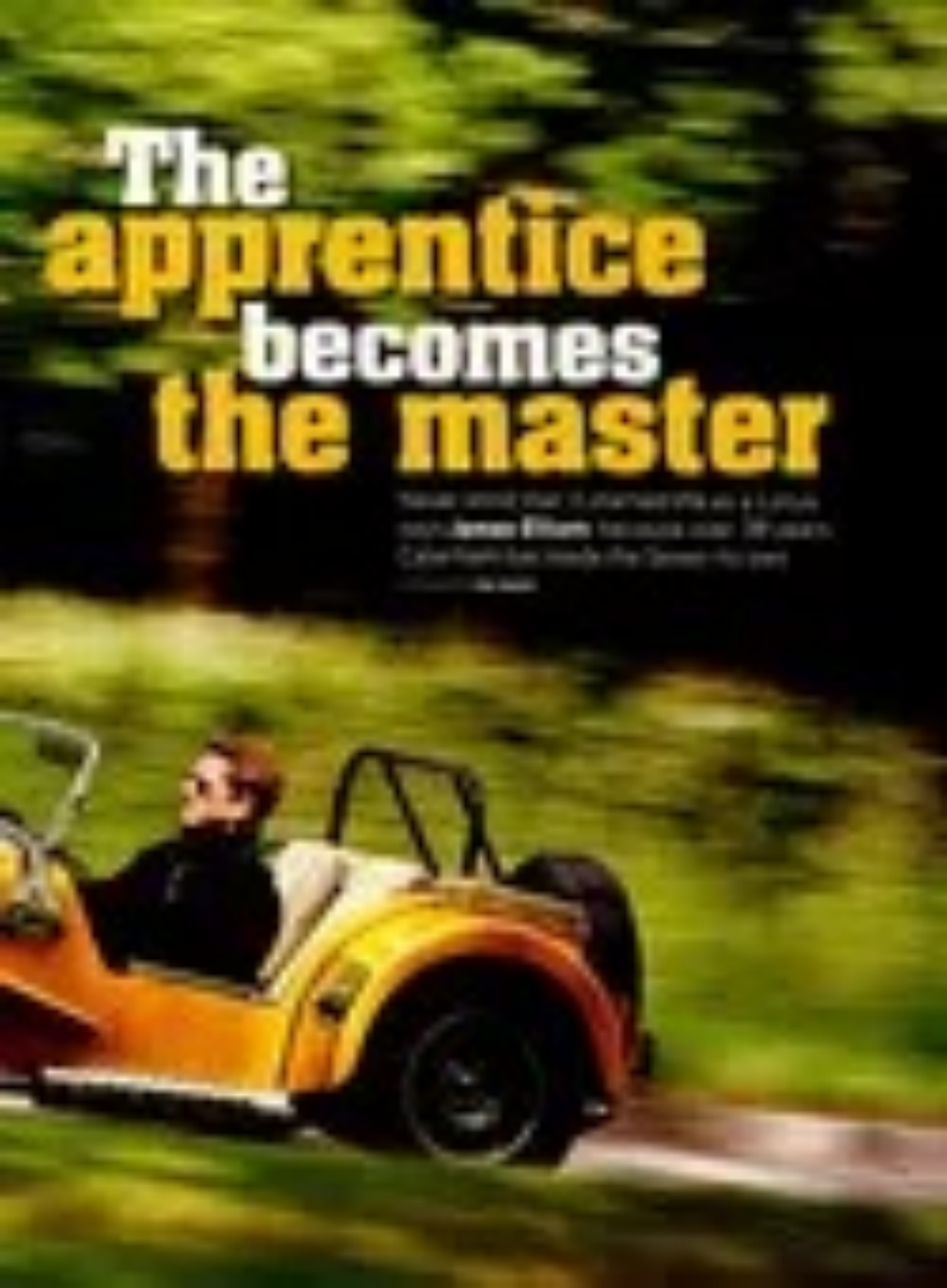

The apprentice becomes the master

M

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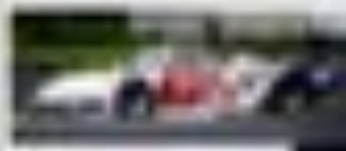


Spice SE 90C

Layout in a shed

Part 2: Construction of the baseboards for the latest BRM Project Layout described by **Colin Brown** and **Mick Quinn** of the Market Deeping MRC. Photography by **Paul Bason**.

1. Before you start the renovation, you'll need to gather together a few tools. Shown here are a hammer, a screwdriver, a drill, a saw, and a tape measure.

2. Once the old plaster has been removed, you'll be left with a bare wall. Before you can start plastering, you'll need to apply a layer of render to the wall.

3. Before applying the render, you'll need to apply a layer of render to the wall. This will help to ensure that the render adheres properly to the wall.

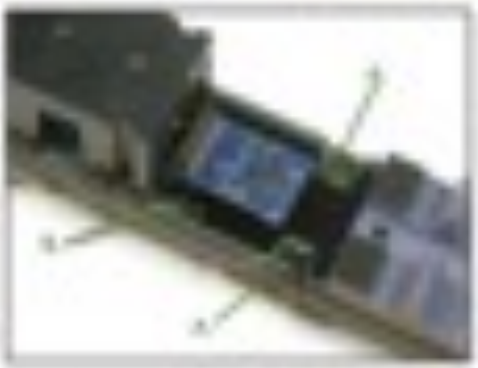
4. Once the render has been applied, you'll need to apply a layer of render to the wall. This will help to ensure that the render adheres properly to the wall.

Detford

This OO gauge finescale layout from **Bexhill-on-Sea MRC** will live at their annual show this August

Digital sound for third rail EMUs

Nigel Burkin's take of two Kent Coast EMUs and digital sound



[illegible]

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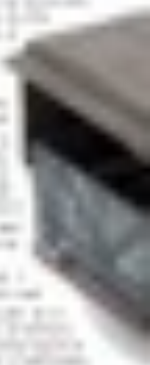
Building a 7mm 'Tilly'

Paul Jarman builds the Fonnya 10hp British Light Utility Car



The LNER B17s

With Hornby's new B17 due out soon, **W O Ascough** of the Gresley Society and LNER Study Circle looks at Gresley's 'Sandringham' and 'Football' 4-6-0s. Photography as credited.

When it came time for Gresley to design a new class of 4-6-0 mixed traffic locomotive for the LNER, he had the benefit of the experience gained with the three-cylinder 'Sir Sam Fay' class of 1911 and the two-cylinder 'Lord Faringdon' class of 1913. Both classes had been built with 6ft 8in coupled wheels, and were intended for express passenger work. Gresley's first 4-6-0 design, the 'Sir Sam Fay' class, had been built with Walschaerts valve gear, but the 'Lord Faringdon' class had been built with Gresley's own conjugated valve gear. Gresley had also built a three-cylinder 4-6-0 with Walschaerts valve gear, the 'Cock o' the North' class of 1914, but this had been built with 6ft 2in coupled wheels, and was intended for heavy express passenger work.

Gresley's first mixed traffic 4-6-0 design, the K3 class, was built with 6ft 2in coupled wheels, and was intended for heavy express passenger work. The first batch of ten locomotives, built in 1924, had three cylinders and Walschaerts valve gear, but the second batch of ten locomotives, built in 1926, had two cylinders and Gresley's own conjugated valve gear. The K3s were a very successful class, and they remained in service until the 1960s.

Gresley's next mixed traffic 4-6-0 design, the K4 class, was built with 6ft 8in coupled wheels, and was intended for express passenger work. The first batch of ten locomotives, built in 1927, had three cylinders and Walschaerts valve gear, but the second batch of ten locomotives, built in 1928, had two cylinders and Gresley's own conjugated valve gear. The K4s were also a very successful class, and they remained in service until the 1960s.

Gresley's last mixed traffic 4-6-0 design, the K5 class, was built with 6ft 8in coupled wheels, and was intended for express passenger work. The first batch of ten locomotives, built in 1929, had three cylinders and Walschaerts valve gear, but the second batch of ten locomotives, built in 1930, had two cylinders and Gresley's own conjugated valve gear. The K5s were also a very successful class, and they remained in service until the 1960s.

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Add working lights to a bi-level cab coach

The marker lights, headlights, and rotary beacon on this Kato HO scale bi-level cab coach can all be controlled using Digital Command Control.
Mike Fitzpatrick photo

A recent visit to a Grand Central Kato Passage de Nord Express layout set in the railroad's namesake city inspired me to try my hand at adding digital command control (DCC) lighting effects to a bi-level cab coach.

For many operations with Chicago's push-pull commuter operations, additional trains (those toward the rear) are pushed by the locomotive but controlled by an engineer in the cab coach. There is a small control cab on the second level at the rear that allows the engineer to operate the locomotive at the other end of the train. On the westbound trip, the locomotive is on the lead and the cab coach displays the marker lights.

I chose the Kato bi-level car over other HO scale models because it has three-position marker lights that are DCC compatible. I used the A4 as a sub decoder and as a means to wire the decoder. I used the Tsunami2 Soundtraxx TSC2-24.4 light-only decoder for the headlights, rotary beacon, and marker lights.

The Kato cab coach lighting is designed so electric current operates when the cab is leading, the headlight is on. When the car is trailing, the marker lights are illuminated. The rotary beacon is a nice functioning detail part.

There is a light board in the cab end of the car with two light-emitting diodes (LEDs), pictured in **Fig. 1**. The left one shines up into the cab interior where it illuminates a clear plastic pipe to the headlights. The short bulb lights a separate pipe for the marker.

I had to completely disassemble the car to limit it to LEDs. Illustrating the interior wiring was new. However, I had to remove the marker lights and watch the light pipe so as not mix the cab interior.

The rotary beacon isn't Kato's detailed, so I planned on drilling a hole in the roof to mount it. The underside of the translucent beacon would then be exposed to the car's interior, allowing me to mount an LED to illuminate it.

However, I discovered that the light pipe for the headlights would interfere with this plan. After careful reviewing, I mounted a more ultra-bright 5mm blue translucent on top of the headlight pipe. I used a piece of electrical tape to prevent the LED's glow from overlapping the headlight pipe, as seen in **Fig. 2**.

Miniature resistors and LEDs mark the anode and cathode (obviously, but I learned that it's sometimes easier to use a 1.5V power supply (like an old DC shaver) and a DMM's resistance to determine which is which. I quickly mount the beacon to an old unit's 1.5V. Where the LED shows stable, the lead connected to the positive side of the power supply is the anode.

I soldered the blue wire to the anode (positive) side of the LED for the rotary beacon, and a green wire to the cathode (negative). I covered the exposed leads with heat shrink tubing and fed the wires down the same hole into the head light pipe that the red LED for the cabin uses — **Fig. 3**.

Since I was satisfied with how the beacon worked, I turned my attention to the light board. There are two long bare leads that supply the power to the light board. A small brass crimped pin slips power for the LEDs.

To wired the DC operation, a single current limiting resistor is used for both LEDs. The cathode of one diode is wired

Fig. 1 Light board. This printed circuit board is mounted in the cab end of the trailer to boot car. The light board has a half-light-emitting diode (LED) for the headlights and a short LED for the marker lights.

Fig. 2 A right fit. After careful measuring and filing, Mike was able to cram the LED for the rotary beacon on top of the plastic headlight pipe. The electrical tape prevents the glow of the LED from appearing in the headlights.

Fig. 3 Wiring the beacon. After determining the anode and cathode leads, Mike noted the LED to the printed-circuit board. He covered the exposed leads with heat-shrink tubing to prevent short circuits.

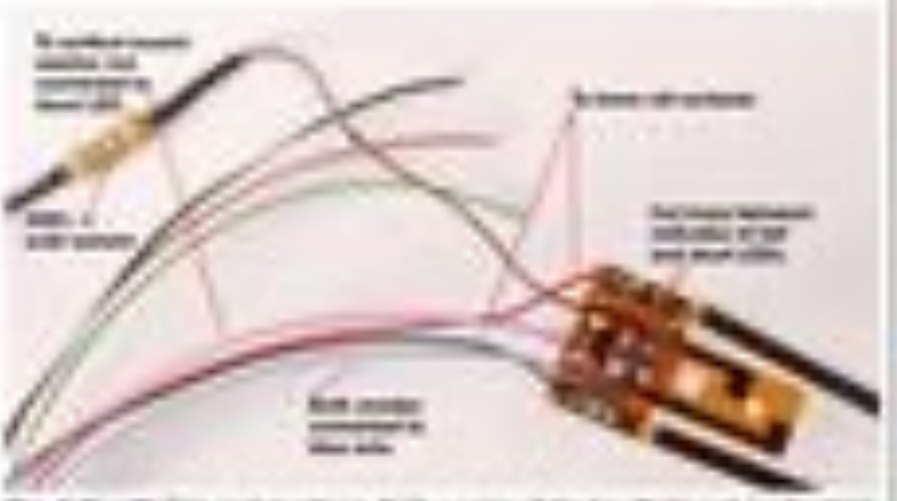

Fig. 4 Headlights and marker. Both anodes of the headlight and marker light LEDs must be connected to the blue decoder wire. Mike used a hobby knife to cut the track between the cathodes of the tail and short LEDs.

to the anode of the other. This allows current to only flow from the Shunt-wire LED and connect at the other allowing one to light the other.

To control the headlights and marker lights with 9V, I fed the anodes of both LEDs which is common and to the blue wire as shown in **Fig. 4**. On the blue I connected the tail LED and connected a black wire. I then used a hobby knife to cut the grooved circuit (PC) board as between what is now the cathode of the tail LED to isolate it from the cathode of the short LED. This is the track connected to the surface mount resistor. The resistor must also be isolated from the long brass strip. I found the cats with an ohmmeter to make sure there's no connect.

Fig. 5 Final installation. Mike ran the decoder and wires to the lower level of the car. He used electrical tape to hold the decoder in place.

I connected the 10Ω resistor between the lower brick wire, and to **Fig. 5**. Once I figured out how exactly one I'd need for each function, I trimmed the excess from the decoder. I soldered the blue wire to the common power minimum of the LEDs, the red and black wires on the brass rail sections individually, and the violet wire to the side of the surface-mount resistor and connected to the tail LED. The tail LED was needed to also connect braking motion, so I soldered a 1N4001 in each resistor to series with the brake wire.

At this point I double-checked my connections and made sure the rail sections weren't connected to anything except the red and black wires. I also made sure that the cathodes of the LEDs were separated.

Then I checked the wiring by connecting track power and ran a train on the brass sections. The 9V decoder programmed to address 3. The motor was controlled by F1 on the DS10 throttle, and the brakes was by F4. I and did as such the lights on and off with my throttle as I was ready to run the details for the day's footage.

I connected the LEDs back to the bike and gave wires and used another 1N4001 resistor to series with the green wire. After testing the brake, I programmed CV35 to 4 to activate the decoder's constant-voltage lighting effect.

I reassembled the car, discarding the cut-off wires on the bottom of the light board. I wired the motor, making sure the functions worked properly (F1 for the running lights, F2 for the marker lights, and F3 for the headlights). The finished car looks good and will continue to see many good yard locomotive service.

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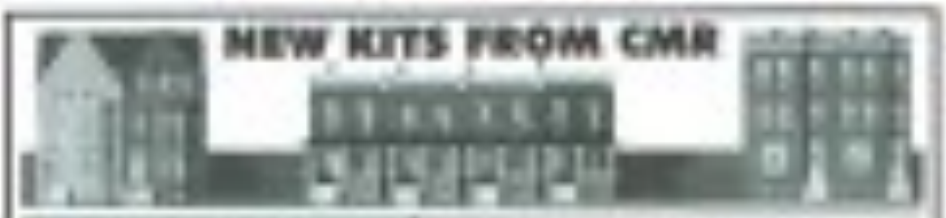

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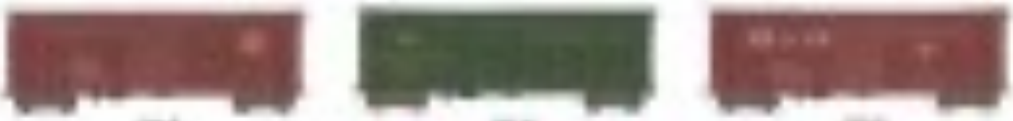

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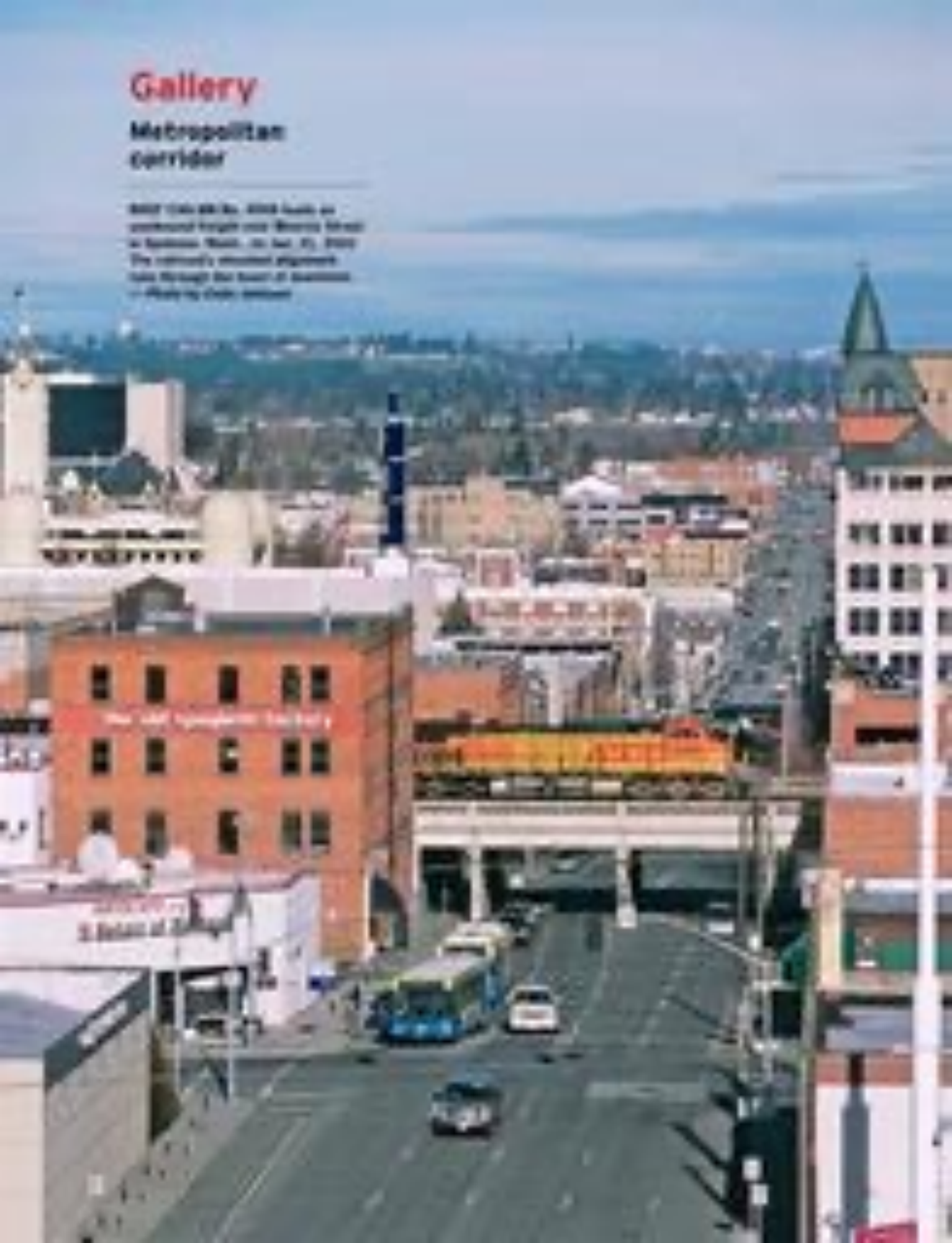

The B&O way

An A-B-A set of Baltimore & Ohio FTs rolls by Bethesda, Md., with commuter trains on the Chesapeake Beach & Washington Line subdivision in September 1950. —Photo by Robert Miller

Amtrak's colorful heritage on display

Forty years after its first train ran, Amtrak gathered five General Electric locomotives wearing historic railroad paint schemes and special anniversary lettering for this portrait at the Ivy City yard in Washington on May 1, 2011. The engines (front unit's no. 642) are No. 100 (in Phase I colors), P42 No. 50 (Phase II), P40 No. 822 (Phase III), P42 No. 184 (Phase IV), and P42 No. 148 (Phase V). —Photo by Bob Johnston

Night train to Denver

Overseeing along South Boulder Creek, a director is the Scenic Western Freight led by SD45-1No. 6323 rounds a curve by Tunnel 17 near Crescent, Colo., in 1972 with dynamic brakes whining and brake shoes smoldering. The photographer used 3.5 flash bulbs, plus the waning twilight, to make this image.
— Photo by Bill Petrick

Ah, wilderness

Summit meeting at Altamont Pass

Breaking dawn

An oncoming train on the Wasatch Division Pacific SD70M No. 9060 pierces nascent red-orange twilight opposite at Kaysville, Utah, 48 miles south of Ogden, on its way to Salt Lake City on Oct. 29, 2020.
— Photo by Justin Tognetti

Take the A train

New York City Transit's A train crosses the Broad Channel bridge on July 22, 2009. The ascending ramp in the area called main track, coming from the bottom of a low-level flying junction to join the higher alignment on the bridge.
— Photo by Stewart E. Winston

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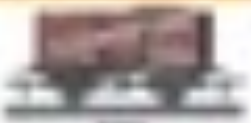

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